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ABSTRACT

The need for adequate knowledge of the personality patterns associated with professional competence, especially that of women professionals, spurred the authors to study this relationship, using 221 professional woman as subjects. The subjects, professionals from nine different occupations, were administered the Wechsler Adult Intelligence Scale (WAIS) from which the patterning of subtest scores provides the basis for the Gittinger Personality Assessment System (PAS). Primary emphasis was placed on the development of stable reference groups based on the complex interaction of PAS variables. A "good" reference group is defined as a set of individuals subject to similar psychodynamic mechanisms which encompasses a large number of persons within its defined limits. But it must be narrow enough to allow prediction of behavior on a within-group basis. Of the sampled professions, only realtors and social workers failed to contribute any members to the three established reference groups. Meaningful reference groups within these two professions were found, however. It is suggested that the pattern derived from the largest reference group, the Professional Generalists, could prove advantageous in university career counseling for women. (TL)

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Final Report

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AN ANALYSIS OF PERSONALITY PATTERNS OF WOMEN IN SELECTED PROFESSIONS

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University of Colorado
Boulder, Colorado

~~December 31, 1969~~

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Summary

This study was undertaken in recognition of the need for more adequate knowledge of the personality patterns which are associated with professional competence, and the further recognition that such knowledge is almost entirely lacking for women professionals. Were such knowledge available it could prove to be invaluable for the counseling of women students in the selection of their professional goals.

It was in the belief that we have an approach which should be productive of such relationships that we undertook to study women Attorneys, Physicians, Pharmacists, Mathematicians, Physicists, Programmers, Realtors, Social Workers and High School Science Teachers.

We have used as our instrument the well known Wechsler Adult Intelligence Scale (WAIS) (14) from which the patterning of subtest scores provides the basis for the Personality Assessment System (PAS) of John W. Gittinger (1964). It is this system, describing as it does, the possibility of about 590 different patterns of personality adjustment, which provides the richness and flexibility for the description of personality dynamics needed for our study.

The WAIS was administered to 221 professional women in seven occupational groups. The obtained subtest scores for each individual were punched on IBM cards and were subsequently subjected to manipulation and analysis by means of a series of computer programs the first of which printed the PAS profiles for each individual.

Though our primary effort was directed toward the development of stable "reference groups" based on the complex interaction of PAS variables, our preliminary analyses demonstrated that even for isolated PAS dimensions the WAIS is capable of making some distinctions between the seven occupational groups. This relatively simple evaluation involved the tabulation of 2 x 7 contingency tables for pairs of the more "fundamental" PAS measures across the seven professional groups. With the exception of the externalizer-internalizer dimension of the PAS the resulting 13 Chi square analyses all attained conventional probabilities of acceptable levels, and even for the E-I dimension, showed a very clear trend. All of the R's are positive, and even the worst of the 13 measures indicates a relationship with occupation that could not be expected from a random variable.

Prior to the above X^2 analyses and prior to any computer analysis of PAS patterning, we attempted to rank the seven groups with regard to the degree of heterogeneity we expected to find in the PAS patterns within the occupational groups, and we asked nine of our colleagues likewise to do so. Though our prediction was correlated somewhat more highly with the obtained ranks than were the mean rankings of our colleagues (Tau of +0.33 vs. -0.15), neither ranking

was of great significance. We had not anticipated the marked heterogeneity of the Social Worker group. These rankings, using the "span" index for heterogeneity of the WAIS-PAS, anticipated our subsequent reference group analyses.

After some manipulation, intuitively dictated and statistically corroborated, we arrived at eight psychologically meaningful reference groups. By far the largest and most stable of these groups - 129 individuals whom we now call "Professional Generalists" - was drawn from only five of the professional groups, to which the Realtors and the Social Workers contributed no examples. The professions which do contribute members to this reference group are those which for the most part set the highest educational standards for entry into the profession.

The stability of this reference group is indicated by the unusually low span value of 0.247. Of those variables which define "Professional Generalists," the Picture arrangement scores are the only ones which are consistently low - a fact which in PAS terms indicates primitive "Role Unadaptability," and which appears to us to have necessitated the development in these individuals of genuinely socially useful skills. There is, nonetheless, substantial within-group variability contributed by only certain PAS variables - those which are <u>not</u> essential to the definition of the reference group. It is this within-group variability which permits of some meaningful differentiation within the several professions represented in this group.

The first dimension of internal variability was consistently and appreciably correlated with each of the WAIS "performance" subtests, and since these subtests are timed, we predicted negative correlation of this dimension with age, and found it to be $r = -.47$. Only the Science Teachers did not display coherently high variance for the performance subtests and they were also notable for low average age.

The second and third dimensions of internal variability (Figures 1 through 6) permit relatively clear differentiation between mathematicians, physicists and programmers within that subject group, between hospital and community pharmacists within that group, and suggest possible differentiations between some of the medical specialties. No potentially pertinent outside intra-group variable was obtained for Science Teachers.

When, from the master file of 20,000 WAIS profiles, we isolated those 200 individuals whose profiles most closely matched the specifications of these professional generalists, we found unmistakable evidence of the professional orientation of these persons as well. Though the master file includes the original WAIS/WISC standardization group of 4,000 individuals, only five of these (four of whom were male) were among the 200 most similar to our professional generalists, indicating that such professional type PAS patterns are normatively rare.

Two other reference groups emerge from the same subject pool which contributed subjects to the Professional Generalists. These we have called the Procedural Specialists and the Intuitive Specialists. The Procedural Specialists, consisting primarily of physicians and attorneys, can be described in PAS terms as individuals who have exploited high-level rote skills; they have the ability to master an unusually complex technique which consistently produces a reliable and valuable result. These individuals do not show creativity, but creativity might become a liability for their particular pursuits were it not controlled. The Intuitive Specialists - including only four physicians - can be characterized in PAS terms as operating "by feel." They have the ability to respond flexibly and even creatively to the idiosyncratic symptom pattern of each new patient. Comparison of these two "Specialist" groups with the master file shows the Intuitive Specialist to be normatively rare, whereas the Procedural Specialist finds fair representation from the normative group.

Our analysis of the Realtor group resulted in clear separation into three distinct reference groups. Furthermore, the within-group variabilities permitted clear tendencies for the saleswomen to segregate from the brokers. For Realtors A--the first of these reference groups composed mostly of saleswomen--it may be inferred that their success is primarily a function of their personal acceptability (Primitive A). Realtors B--a group dominated by saleswomen--we judge to be successful primarily because of their application to the job. This group has much in common with the group we have called Procedural Specialists. Realtors C--essentially a group of Brokers--is unique in our study of 221 individuals in that it includes <u>all</u> three individuals whose PAS record includes Basic R*. Comparison of the most similar cases from the master file shows this Realtor C pattern to be more typically a male pattern, whereas this is not the case for Realtors A and Realtors B. The patterns for Realtors A and Realtors C are found to be normatively quite common.

Our analysis of the Social Worker group has yielded two reference groups. Individuals in the two reference groups, Social Workers A and Social Workers B, appear to have found roles which provide fulfillment for their fundamental needs--the case workers for involvement with other persons, the administrators for a position providing authority and security. Normatively both of the patterns for Social Workers are found to be typically female, the pattern for Social Workers B being found to occur more commonly in the normative group than any other in our study.

Though this study has been exploratory in nature, it has nonetheless been sufficiently productive of meaningfull results to suggest that for a university woman whose WAIS/PAS pattern fits one of the reference groups we have established, it should be possible to suggest that she consider preparing for a career in the profession or in one of the professions represented in that reference group. Since these reference groups show job-related intra-group

variabilities, it is further possible to suggest to such a student that she would be likely to find greater satisfaction in one aspect of the chosen profession rather than another.

I. INTRODUCTION

The plan for this investigation grew out of an insistent awareness of our need for a more effective means of advising women students regarding appropriate educational and vocational goals. The Staff of the University of Colorado Women's Center, wishing to contribute to the development and full utilization of the talents of women, recognized that vocational choice clearly depends as much on the possession of certain job-essential personality characteristics as it does upon adequate educational preparation for the job. Often training has been adequate, opportunity has been provided, and the person is only then found to be unfitted for the job by reason of behavior patterns or personality traits which are unsuited to that particular field of endeavor. These same personality patterns might well be highly advantageous in a different vocational setting.

So little has been done to discover the job-related traits in women which might contribute to success in the professions, that we felt that we must "break ground" here. Our immediate concern, therefore, has been to identify job-related personality characteristics for women in professional groups composed of Attorneys, Physicians, Pharmacists, Mathematicians, Physicists, Computer Programmers, Realtors, Social Workers, and High School Teachers of Science.

In the selection of our subjects we found ourselves to be somewhat limited by their availability and willingness to participate. For several of our selected professions there are relatively few women professionals in the Denver metropolitan area from whom it was feasible for us to sample. Despite this fact we were able to find 30 or more women in each of the specified professional groups willing to find time for our test procedure within their busy schedules. Many among these subjects expressed pleasure in hearing that we ultimately hoped to be able to provide some direct vocational guidelines for women who were thinking of professional careers.

The Gittinger Personality Assessment System had appeared to us to be the most promising instrument for illuminating the personality dynamics of success, since it had already proved itself to be a promising tool for the assessment of functioning personality and had further given researchers some grasp of the dynamics of personality adjustment. This system, often called simply the PAS, describes three levels of adjustment: the primitive or primary level, the basic or attained level, and the contact or surface level. At each of these three levels the personality is described in relation to three polar variables: Internalizer--Externalizer (I-E), Regulated--Flexible (R-F), and Role Adaptable--Role Unadaptable (A-U).

The PAS assumes that one has certain primitive or innate personality attributes, but that these will be subjected to environmental (parents, teachers, peers) pressures which may either re-enforce these primitive traits or may reward opposing forms of

behavior. When the pressures occur and the individual reaches an "equilibrium" with them, he may be recognized either to be "uncompensated" or to have "compensated," and this results in his basic level of adjustment. This stage of adjustment is thought to take place relatively early in childhood. A later and more labile adjustment--the contact, ideal, or surface level of adjustment--takes place in adolescence, this time primarily in response to conscious wishes and desires for self-determination.

Unfortunately it cannot be a purpose of this report to explicate the Gittinger Personality Assessment System, and the interested reader is referred to Winne's lucid summary (Winne, 1966).

It should be noted, however, that the current formulations of this theory are based in part on the clinical insights of John Gittinger and in part upon various published research reports (Saunders, Thetford, Shucman, et al.) which have used it.

It is the effort to find meaningful "reference groups" (herein defined, p. 8) of professional women to which this study has been primarily directed.

II. PROCEDURES

A. Informational Hypothesis Testing

This study is primarily exploratory, rather than confirmatory. Although we entered into the study with substantial confidence that interesting results would emerge, based on past experience with the PAS interpretation of the WAIS, we did not feel that it was either necessary or desirable to spell out in advance specifically what hypotheses we would test. The purpose of an exploratory study is to give data a chance to speak for themselves; in such a context it is the responsibility of the investigator simply to assess carefully the weight of the evidence suggestive of this or that possible conclusion, and to report all the ways in which his data appear to depart from the expectations of the null hypothesis.

The procedures that may be invoked in order to make these explorations objective, in the sense of yielding agreement among investigators as to the important findings, are relatively recent developments and not yet widely understood. Essentially, these procedures depend upon an information-theoretic formulation of the process of scientific discovery and growth, and avoid any attempt to render judgments on a probability scale. When probability is defined in relative frequency terms, the probability of truth of any scientific hypothesis must be seen to be infinitesimal, and only an infinite amount of supportive evidence can alter this estimate. On the other hand, it is often possible to measure objectively the relative amounts of information suggestive of this or that alternative interpretation, and so to make rational judgments as to the appropriate next steps in an inquiry (Good, 1950; Popper, 1935).

For these reasons we shall eschew the language of the conventional statistical "significance test" and will report instead the numbers of "bits of information" represented by particular deviations from null expectations. When this number is high, it is natural to refer to the results as "remarkable" (Saunders, 1970), and to the information as "remarkability." When this number is low, the results may be safely ignored. A rough guide as to what are high or low numbers may be provided by the following table:

Conventional Significance Level --Alpha	Equivalent Bits of Information
.10	∿ 3 - 7
.05	∿ 4 - 9
.01	∿ 6 - 12
.001	∿ 9 - 16

The correspondences in this table are not exact because the conventional approach makes no attempt to assess the true worth of the information on which an hypothesis under test is based, substituting

instead the dictum that the hypothesis must be stated in advance of data-collection. If such a basis for an hypothesis did exist, a confirmatory experiment is judged successful when it meets the minimal informational threshold shown; even if no such basis existed, when the information approaches the maximum threshold shown in the table, the indicated result may be relied upon as though it had come from a confirmatory experiment.

This informational approach to hypothesis testing may be applied whenever the (im)probability of a result under a null hypothesis may be computed. The probability value, which will be small for any results of interest, is converted to bits of information according to

$$I = -\log_2 \frac{p}{1-p} = \log_2 \frac{(1-p)}{p} \qquad (10).$$

(The ratio of p to 1-p may be recognized as the odds in favor of p under the null hypothesis being used.) This approach to the testing of PAS hypotheses has been previously employed in a study of efa* females (Saunders, in press).

B. Reference Groups

For the purposes of this study, reference groups may be defined as a set of real individuals who are subject to similar psychodynamic mechanisms, i.e., whose personality profiles, while not necessarily identical, are sufficiently alike so that parallel perturbations in a given measure may lead to parallel behavioral changes, or be given parallel interpretations.

The need for such a concept as that of a reference group may not be self-evident, but it arises in connection with the PAS because of the complex patterns of interaction among variables that are implied by the system as a whole. Almost any score-level on any subtest of the WAIS may be regarded as either "good" or "bad," depending on the configural context provided by the remaining variables. For example, a relatively low Digit Symbol performance often betrays a low energy level, but in certain contexts it may reflect an appropriate control through passivity of acting-out tendencies.

The criterion that a "good" reference group strives for is to be sufficiently broad to encompass a number of persons within a single rubric and at the same time to be sufficiently narrow to permit the application of the simple linear regression model for the prediction of behavior on a within-group basis. Given the present state of the art, it is distinctly easier to recognize groups having these two properties than it is to specify procedures that will automatically produce them. (This situation is analogous to that which confronted the concept of "simple structure" in factor analysis in the mid-1940's, prior to the development of the so-called analytical methods for rotation.) Fortunately, the informational techniques for hypothesis testing may be continuously applied during the search

for good reference groups, and may provide one quantitative indication of our degree of success.

Other tools to facilitate the search for good reference groups in the data of this study were also already available. Aside from a working knowledge of the PAS as a descriptive system, these were a series of computer programs written to accept and manipulate WAIS data. The program designated as PAS1 is designed to maintain a large magnetic tape file of individual WAIS protocols, correcting and inserting data as they become available; a PAS1 file of nearly 20,000 cases, representing dozens of sources, was available to provide baselines for comparison with the present data. (But virtually none of these cases were professional women.) The program designated as PAS2 is designed to accept any subset of from 1 to 200 cases and to characterize and evaluate them as a reference group; a more complete description of this program appears elsewhere (Saunders, manuscript). As part of its evaluation, in addition to its examination of intragroup properties, PAS2 is capable of searching the PAS1 file to find cases that might be added to the group. The program designated as PAS3 is designed to accept any subset of from 1 to 400 cases and to seek out possible cleavages, so that the given group may be subdivided into two or more parts. The program designated as PAS9 is designed to accept data for newly-tested individuals, printing their profiles and searching out from the PAS2 characterizations those groups which the new person is most similar to. (There is no restriction, either in theory or practice, that a given person may belong to only one reference group.)

A major part of the analysis effort in this study has been directed toward the isolation of "good" reference groups that would somewhere include most or all of the professional women who were our subjects. These analyses made primary use of PAS2 as a means of assessing the consequences of various possible groups, but PAS1 and PAS9 were used also. The initial results using PAS2 were judged to be sufficiently clear in their implications to render the use of PAS3 unnecessary.

Obviously this discussion has not defined a "procedure" for obtaining the best possible reference groups in these or any other data, and it cannot be claimed that the groups to be reported below cannot be improved upon. On the other hand, to the extent that these groupings display coherent dimensions of intragroup variability and consistent patterns of external validity, they may serve to illustrate the utility of the reference group concept and to demonstrate the viability of a plan for individual counseling based on this concept. Appropriate measures of this coherence and consistency will be provided in context.

C. Sampling of Subjects

Seven groups of professional women were individually administered the Wechsler Adult Intelligence Scale (WAIS) and each of their subtest score patterns was subsequently analyzed by means of the Gittinger Personality Assessment System (PAS).

The participation of the professional women as subjects was achieved by a series of steps. Membership lists identifying women in appropriate professional groups in the Denver Metropolitan area were obtained from the sources listed in Appendix 1. Then, either by explanatory letter (Appendix 2) or by telephone, 30 women in each of the seven groups were invited to participate. Because some of these persons were unable or unwilling to participate, it was necessary to contact more than 30 women in each group. Whenever a prospective subject did express willingness to participate, an appointment for testing was made and a tester went to her at the time and place convenient for her. Table I presents a tabulation accounting for the individuals contacted in each profession.

The testers who administered and scored the WAIS were fully competent and experienced; they are listed, together with their qualifications, in Appendix 3.

A slightly altered order of presentation of the WAIS subtests was used, following the recommendations in Winne (1966). The form on which data were recorded is included in Appendix 4. All these records were checked for accuracy of scoring before punching the information into IBM cards.

A PAS1 listing of the test results for each individual is included as Appendix 5. These results are the basis of all of the analyses to follow.

Table 1

The Subject Groups

Professional Groups	Number Contacted	Number Tested	Age Range	Age Mean	Years of Education Range	Years of Education Mean
1. Attorneys	45	30	27-74	42.5	16-21	18.9
2. Physicians	47	30	29-65	44.9	18-22*	21.1
3. Pharmacists	53	30	25-61	39.6	13-19	16.1
4. Mathematicians-Physicists-Programmers	45	39	22-62	36.7	12-22	17.1
5. Realtors	56	30	24-71	49.3	12-18	13.8
6. Social Workers	43	32	24-64	43.3	14-20	17.9
7. Science Teachers	45	30	21-55	32.9	15-20	17.0

*Twenty-two years of education was arbitrarily considered to be the maximum of formal schooling - though some declared as many as 33 years.

D. Outside Variables

Early in the analysis of our data we felt it necessary to determine related outside variables which could lend support to the "correctness" of the subdivisions we were able to establish statistically. With the aid either of colleagues or of members of the professions studied, we were able in the case of every occupational group but one, to obtain fairly complete data for at least one potentially pertinent outside variable, albeit a different variable for each occupation. These variables are summarized here:

Group 1--Attorneys--For most of the Ss, information was obtained concerning the character of their practice--whether with a firm or not--whether active in professional organizations or not--whether a specialist or not, and if so what specialty. (Formal specialization is relatively rare among attorneys.)

Group 2--Physicians--The obtained information was similar to that obtained for Attorneys, but formal specialization was found to be relatively common. Also, a few of the Physicians were primarily engaged in teaching.

Group 3--Pharmacists--The information most consistently available indicated whether S was employed as a "hospital pharmacist" or as an over-the-counter drugstore pharmacist.

Group 4--Programmers--In the beginning this had seemed the most difficult group to recruit for, primarily as a result of non-cooperation with the study by the largest employer of potential subjects, who feared we were really engaged in a subtle form of proselytizing. The definition of the group was expanded to include mathematicians and mathematical physicists, and this professional distinction became our primary intragroup variable.

Group 5--Realtors--The members of this group may be classified either as Saleswomen or Brokers, with a few of the latter owning their own Real Estate firms.

Group 6--Social Workers--The members of this group were classified by those familiar with their work as Case Workers, Administrators, or as Therapists. In most instances they were classified by actual job function, and in all instances by personal inclination.

Group 7--Science Teachers--We were not successful in obtaining any intra-group data for these Ss.

III. PRELIMINARY ANALYSES

In this chapter we shall present the results of two so-called preliminary analyses, in which the data for all 221 subjects were used without distinction.

A. Chi-square Screening of the PAS Dimensions

Although this has not been formally stated as an hypothesis, it is obvious that the success of this whole study hinges upon the ability of the WAIS to provide usable information about the individual professional women subjects; the WAIS is the only measure in the study that is available for all subjects. (Even age is a missing item of information for 2.2% of this sample of women!) Thus, while it is our intent to pursue further subdivisions of the total sample, if the WAIS should be incapable even of making distinctions between the seven occupational groups as they stand, this would be a serious omen. Conversely, if we may demonstrate some simple differences among the seven groups by studying the isolated PAS dimensions, this may bode well for the later definition of reference groups in which the patterns of several dimensions at a time are considered.

The results of a relatively simple evaluation of some of the more "fundamental" PAS measures are reported in Table 2. In order to construct this table, we simply tallied the frequencies with which PAS1 assigned various PAS codes to the members of the seven groups. Each of the PAS variables considered led to the tabulation of a 2 x 7 contingency table; 13 such contingency tables are brought together in Table 2.

The most interesting aspect of Table 2 is the sum of the remarkability values given in the last column. To the extent that this is a positive number it indicates that members of the different groups are seen differently by the WAIS. From the table we may also see the relative contributions to this total of each of the PAS measures considered. When data are purely due to chance, we could expect the positive R contributions to be offset by about equal negative R contributions; it is therefore appropriate to note that even the worst of these 13 measures shows more relationship (R is positive) with the occupational classification than we could expect from a random variable.

The contributions of the 13 dimensions to the total remarkability may not be completely independent and non-overlapping, and consequently the tabulated values should not be regarded as more than a general indication of the trend of these results. This trend is clear; even if we make gross over-allowances for possible redundancy of the PAS dimensions there are ample indications of ways in which the WAIS can be used to distinguish the seven occupational groups from one another.

We do not propose to use these results as a basis for choosing which PAS dimensions to use later--they will all be used later.

Table 2

Chi-square Evaluations of Particular PAS Dimensions as Potential Occupational Discriminators*

Dimension of the PAS**	Occupational Groups by Code***										
	1	2	3	4	5	6	7	Σ	X^2_6	P	R
Primitive E	11	13	11	16	11	13	18	93	10.44		+3
Primitive I	19	17	19	23	19	19	19	128			
High Arithmetic	24	19	25	34	22	19	19	162	134.68	.001	>15
Low Arithmetic	6	11	5	5	8	13	11	59			
Basic E	19	14	20	18	19	20	17	127	10.42		+3
Basic I	11	16	10	21	11	12	13	94			
Contact E	17	17	19	23	15	19	12	122	6.75		+0.9
Contact I	13	13	11	16	15	13	18	99			
Primitive R	15	16	14	27	13	9	20	114	15.96	.02	+6
Primitive F	15	14	16	12	17	23	10	104			
Basic R	3	2	0	1	6	0	0	12	179.62	.001	>15
Basic F	27	28	30	38	24	32	30	209			
Contact R	30	27	28	35	30	30	30	210	180.86	.001	>15
Contact F	0	3	2	4	0	2	0	11			
Primitive A	8	8	10	13	11	11	10	71	29.24	.001	14
Primitive U	22	22	20	26	19	21	20	150			
Basic A	9	11	8	10	12	10	12	72	29.58	.001	14.2
Basic U	21	19	22	29	18	22	18	149			
Contact A	19	19	22	25	16	19	18	138	16.30	.02	6.3
Contact U	11	11	8	14	14	13	12	83			
L	14	15	5	5	10	12	7	68	48.84	.001	>15
H	16	15	25	34	20	20	23	153			
Low Q1	18	7	17	13	9	14	15	92	16.83	.01	6.6
High Q1	12	23	13	26	21	18	15	128			
Low Q2	23	19	15	23	18	19	18	135	15.43	.05	5.7
High Q2	7	11	15	16	12	13	12	86			

Table 2 (Continued)

*Each of the chi-square values reported in this summary is based on an analysis of the 2 by 7 table of frequencies given immediately to its left, working from the null hypothesis that each column should be proportional to the figures shown in the total columns. Any lack of proportionality will tend to increase chi-square for that particular table. The remarkability of each chi-square is based on its expected distribution for six degrees of freedom. Since no hypotheses were explicitly stated, a total remarkability of about 10 bits is suggested as an appropriate standard for noteworthy results.

**Operational definitions for these dimensions may be found in Winne (1966). The results obtained by applying these definitions to these subjects are detailed in Appendix 5, from which the frequencies in the body of this table may be tallied.

***The codes for the occupational groups are:

1. Attorneys
2. Physicians
3. Pharmacists
4. Mathematicians, Physicists, Programmers
5. Realtors
6. Social Workers
7. Science Teachers

Total across all seven groups.

However, we may reasonably suspect that the measures in the E-I area will be least useful for reference group definition, and will display relatively most within-group variability.

B. Relative Heterogeneity of Occupational Groups

Even before developing the information reported above in Table 2, we decided to try to predict the relative homogeneity or heterogeneity of the seven groups, since it would clearly be possible to judge the success or failure of these predictions as the analyses progressed. With something less than absolute confidence in our infallibility, we recorded the following ranking:

Pharmacists (predicted most homogeneous)
Social Workers
Mathematicians-Physicists-Programmers
Science Teachers
Attorneys
Physicians
Realtors (predicted most heterogeneous)

We also invited nine of our colleagues to participate in these predictions, and found their composite judgment to run as follows (their individual rankings are in Appendix 6):

Social Workers (predicted most homogeneous)
Mathematicians-Physicists-Programmers
Physicians
Realtors
Science Teachers
Pharmacists
Attorneys (predicted most heterogeneous)

The correlation between these two sets of predictions seems surprisingly low despite the low level of confidence with which they were made.

When the total available sample for each occupation was evaluated by PAS2 as though it were a reference group, the following ranking emerged (Table 2):

Table 3

Obtained Ranking of the Occupational Groups

"Span"*	Group
.435	Mathematicians-Physicists-Programmers (most homogeneous)
.443	Science Teachers
.485	Pharmacists
.510	Attorneys
.530	Physicians
.578	Realtors
.620	Social Workers (most heterogeneous)

*(Saunders, 11)

The Tau (correlation) coefficient between our colleagues' composite prediction and these results is -0.15, which is not significant by any standard. Our own predictions fared a little better, yielding a Tau of +0.33; this is in the right direction, but would be exceeded by 11.9% of chance-determined results. If we had better perceived the heterogeneity of the Social Worker group we would have achieved a more substantial correlation, since the other six groups were ranked quite closely with the results. One of our colleagues whose overall correlation with the criterion ranking was better than ours (Tau = +0.37) and who correctly ranked the Mathematician-Physicist-Programmer group as most homogeneous, based his rankings on the principle that the more complex the training involved, the more homogeneous would be the PAS patterns within the group.

Past use of the "span" indexing for the heterogeneity of WAIS-PAS Reference Groups has suggested that values as large as 0.45 - 0.50 are minimally acceptable--smaller values are to be preferred. From the values given in Table 3 it is possible to anticipate a second aspect of the reference group analyses to be detailed in the next chapter: the Mathematicians-Physicists-Programmers and Science Teachers emerge unsubdivided; a few atypical individual Pharmacists have been set aside; the Attorneys are mainly divided between two groups; and each of the remaining occupational groups is subdivided into three.

IV. Reference Group Analysis

As has already been indicated in Chapter II, the process of generating reference groups has not yet been reduced to a convergent procedure, which needs merely be applied to data in order to guarantee results. Rather, the process is an art, in which the judgments and intuitions of the experimenter play an indispensable role.

We began the present analyses with the thought that each of the seven occupational groups might potentially be broken up into two or more subgroups, and sought in the PAS2 outputs indications of the way to do this that would lead to the greatest improvements in the span values. This led quickly to separations of the Realtors, Physicians, and Social Workers each into three subgroups. The Pharmacists and Science Teachers were each divided into two subgroups, while the remaining two occupations proved difficult to divide in any way that seemed both psychologically meaningful and statistically advantageous.

We also expected that we could find meaningful relations involving outside variables if our subdivisions were "correct." These relations might be represented either by differences between two subgroups on the outside variable, or by correlation of the outside variable with a major dimension of intra-group scatter.

As the analyses progressed, we kept an eye on (1) the purely statistical critera for a good reference group--primarily a low span index, a clean separation of major and minor dimensions of intra-group variablity, and an absence of isolated atypical group members, (2) the PAS interpretations of the modal profiles and major internal dimensions, and (3) the emerging relations involving the outside variables.

It became evident when we were reviewing the results of the initial separations into subgroups that several of the obtained groups showed essentially the same structure on internal variability along with similar modal profiles. We therefore decided to explore the consequences of combining these groups, and were pleased by the results. In this way we arrived at the large group which we have christened "Professional Generalists," which includes a total of 130 Ss representing five of the seven professions. A second group which cuts across professions we have christened "Procedural Specialists"--this group includes 15 of the Attorneys and Physicians. The only other group to which these more-educated professions contribute is a very small group of "Intuitive Specialists," represented in these data by four of the Physicians. The initial subdivisions of the Realtors and the Social Workers were not affected by the decision to combine groups.

In the discussion which follows, we propose to consider the eight reference groups obtained from the data of this study one by one.

A. Professional Generalists

Slightly more than half of our total sample of subjects from seven occupational groups were ultimately assigned to the reference group of "professional generalists," making this the best-represented group by a wide margin. The 129 women classified here are actually drawn from only five of the professional groups; the Realtors and Social Workers do not contribute any examples of this pattern. The professions that do contribute members to this reference group are those which effectively set the highest educational standards for entry into the profession, and one obvious common characteristic of the group members is that they have cleared a long sequence of educational hurdles; indeed, it may be safe to suggest that these requirements seem natural and necessary to the professional generalist, who has no alternative to relying upon such formal credentials as the indication of competence. (As we shall see, a viable alternative is exploited by certain Realtors and Social Workers.)

In view of the relatively large number of professional generalists who turned up in this study, it is possible to generate a relatively stable and detailed characterization of this reference group (Table 4); the quality of this characterization is indicated by a span value of only 0.247. This value of the index is in the same range as the best that have been achieved for WAIS-PAS reference groups to date, but is achieved here primarily as a function of large N rather than as a function of extreme group homogeneity. Psychometrically, the group may be characterized by specifying the group mean on each of the PAS variables together with the variances and covariances of these variables, as in the upper section of Table 4. Factor analysis of the covariance matrix helps to highlight some of its implications, especially as regards the dimensionality of the within-group variation; this analysis appears in the lower section of Table 4. Experience has shown that factors whose latent roots exceed about 3 in this analysis are likely to be interpretable. It is immediately evident, therefore, that this group of 129 professional generalists displays substantial within-group variability, although this variability is still only a small fraction of what would be seen in an unselected group of subjects. The variability seen here is contributed by only certain of the PAS variables; the remaining variables, that is, the ones which do not vary much, may be regarded as the ones essential to the definition of the group as a whole. Of the variables which remain relatively constant for the professional generalists, only one is fixed at a statistically abnormal level; the Picture arrangement (PA) scores for this group are consistently low, averaging 3.92 WAIS points below Normal Level with a standard deviation of only 1.8.

Low scores on PA are interpreted within the Personality Assessment System as an indication of primitive "Role Unadaptability," and

Table 4

Reference Group Characterization for 129 Professional Generalists*

Span = .247

	WTS Variables less NL												
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1394	47	104	-195	-38	91	-392	-210	-118	-272	-129	79	-82
Covariances													
NL	135	-12	-42	-27	-44	10	-00	-45	14	-53	-55	23	-19
I-NL	-12	115	-09	-34	-40	-02	-18	-27	-36	-11	-17	03	-03
C-NL	-42	-09	252	75	-31	-16	-14	-13	-100	12	-39	-13	04
D-NL	-27	-34	75	698	06	-78	10	-60	-149	-20	-30	41	01
A-NL	-44	-40	-31	06	376	-65	11	24	20	-30	-02	16	25
S-NL	10	-02	-16	-78	-65	168	-33	19	-65	-07	-04	-23	15
PA-NL	-00	-18	-14	10	11	-33	339	74	95	68	89	-07	-09
PC-NL	-45	-27	-13	-60	24	19	74	254	86	86	93	-58	-29
BD-NL	14	-36	-100	-149	20	-65	95	86	553	166	219	-42	-35
OA-NL	-53	-11	12	-20	-30	-07	68	86	166	294	124	-19	12
DS-NL	-55	-17	-39	-30	-02	-04	89	93	219	124	410	-41	07
Q_1	23	03	-13	41	16	-23	-07	-58	-42	-19	-41	192	01
Q_2	-19	-03	04	01	25	15	-09	-29	-35	12	07	01	185
Eigenvectors													Roots
I	-03	-03	-16	-47	02	-01	20	23	62	29	41	-10	-03	1015
II	-11	-09	08	82	08	-18	25	09	20	23	31	01	-01	705
III	-02	-10	-21	-04	89	-23	01	-03	11	-23	-14	12	05	447
IV	-34	-03	35	-17	27	15	23	45	-51	17	14	-22	14	373
V	23	-01	-11	-05	-13	-07	85	08	-07	-14	-33	12	-18	324
VI	-07	-04	55	-07	03	-28	-09	01	29	40	-58	-01	-13	280
VII	06	-11	-21	17	-01	14	-24	56	09	-21	-21	-41	-50	255
VIII	-00	-02	-52	10	01	27	-07	20	-08	57	-35	21	32	226
IX	-10	14	-03	-0[illegible]	02	-13	-14	16	-21	16	20	67	-59	199
X	35	-65	31	01	03	40	-05	15	11	-12	06	36	10	165
XI	-12	13	02	-00	-25	-41	-10	53	12	-36	-06	28	46	139
XII	-44	39	14	11	07	60	11	-03	34	-25	-15	21	-03	111
XIII	69	60	22	08	21	11	-05	19	01	10	09	-02	09	93

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

they are taken to imply a relative absence of innate social skills. Persons with relatively higher PA scores are supposed to be capable of responding spontaneously and effectively to configurations of subtle social cues, and to be able to gain acceptance purely on this basis because they apparently respond in the ways that others expect. Persons with relatively lower PA scores, such as our group of professional generalists, would lack this aptitude and would be forced to develop alternative means for social acceptance - such as the development of a genuinely socially useful skill (Gittinger, 1964, p. 43).

Further support for this interpretation is provided by the final PAS2 runs*, in which we isolated from the master file of 20,000 WAIS profiles the ones which most closely matched the specifications for this reference group; the most similar 200 cases in the master file were found and then ranked in order of overall similarity as well as on each major dimension of within-group variability. The cases selected as most similar were (1) a 24 year old male student in a theological seminary, (2) a 17 year old male high school student known as an academic over-achiever, (3) a 21 year old female student nurse, (4) a 19 year old female student planning to go into the teaching of mathematics, etc. The professional orientation of the persons chosen in this way in unmistakable.

One segment of the master file includes the 4,000 cases used for norming the WAIS and the WISC--2,000 males and 2,000 females selected by quota sampling techniques to represent the American population. Only 5 of these cases were among the 200 selected for similarity to the professional generalist reference group. This is far fewer than the 40 who would have been expected by a random selection, and is also fewer than were obtained for any of the other reference groups to be discussed. Thus, even though professional type patterns are heavily represented in the master file as a whole, reflecting the research interests of the contributors to it, such profiles are normatively rare. Of the 5 such cases found, 4 are male; this may suggest that the professional generalist pattern is more common among males, but because of the small sample this result contains only 2 bits of remarkability.

Turning now to the internal aspects of the generalist reference group, we note that the most important dimension of variability (V_1) is consistently correlated with each of the "performance" subtests of the WAIS, but not with the "verbal" subtests. (The correlation of -.47 with Digit Span can be eliminated by a factorial rotation in the plane of the first two dimensions.) This same pattern was also observed in the earlier PAS2 analyses for four of the five separate occupational groups represented among the professional generalists.

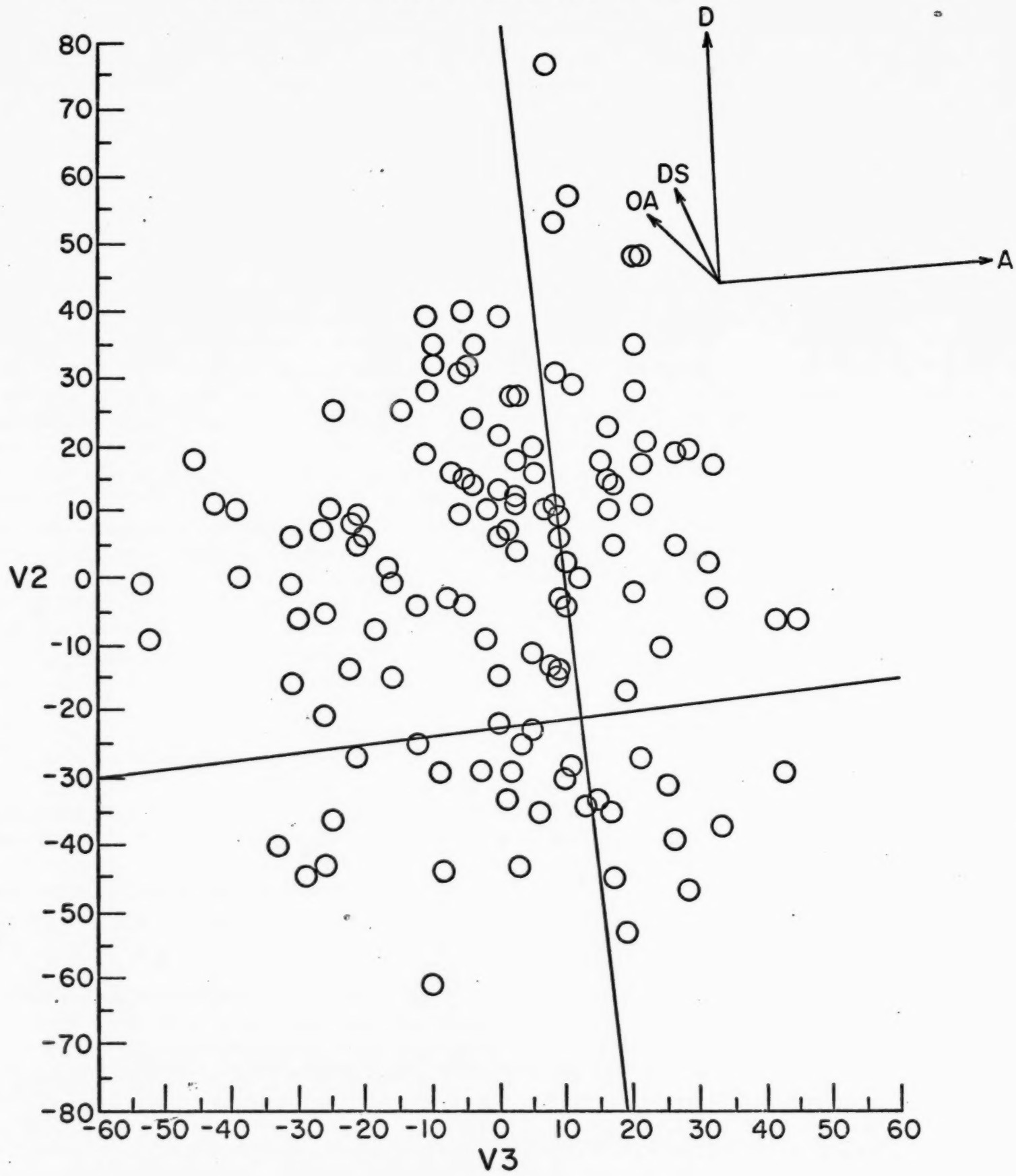
*This PAS2 printout is far too bulky (and too expensive) to include in this report but may be loaned for research purposes to interested readers.

The science teacher sample was exceptional in not displaying this coherently high variance for the performance subtests, and this same sample is notable for its low average age (Table 1). Since the common denominator of the performance tests is their "speededness," and the ability to work rapidly does decline with age, we postulated that we should find a negative correlation between scores on this first dimension and the reported age of the subject. Age was known for 125 of these 129 subjects; the Pearson correlation was -.47. This result contains >15 bits of remarkability, which leaves essentially no room to question the result.

Consideration of the V_1 scores for the 200 cases selected from the master file extends this picture. The negative correlation with age may again be observed. Because of the composition of the master file, the search turns up a relatively larger proportion of younger individuals with high V_1 scores than is characteristic of the reference group as defined in Table 4. The comments associated with low V_1 imply a high degree of identification with the "establishment" and with truly professional-level activity, whereas the comments tied to the highest V_1 cases suggest an actual rejection of such values and activities after having shown an initial interest in them. What is startling is that the latter group includes the only two known drug users in the master file, along with a young woman characterized as having a stong "unconventionality drive," and another young woman who found the role of "resident advisor" in a student dormitory to be uncongenial. On the other hand, the low V_1 extreme seems to include persons who are interested in applying their professional skills specifically in the context of public service. This result raises interesting questions concerning the potential mobility of individuals within reference groups.

As a technical note concerning the adequacy with which the PAS computer programs are able to simulate Gittinger's clinical judgments, we may note that Gittinger's judgments of "true" NL are available for 18 of the 200 selected cases. For 13 of these 18, NL29 rounds to the same integral value; for 1 case NL29 is too low, and for 3 cases NL29 is too high. When this pattern of hits and misses is considered in relation to scores on V_1, it becomes clear that the misses are associated with the extremes, and that NL29 may overestimate when V_1 is low while underestimating when V_1 is high. This is possible, despite the fact that NL29 was developed by multiple regression techniques using Gittinger's judgments as a criterion, since only one NL formula was being developed to be applied universally, and the possibility of varying the formula for different reference groups was not allowed.

The second and third dimensiosf of variability (V_2 and V_3) within the professional gerneralist reference group may be neatly identified with the Digit Span and Arithmetic subtests, respectively. Since the Arithmetic score is interpreted in the PAS as measuring strength of compensation for the traits implied by the Digit Span score, we will consider V_2 and V_3 together. Figure 1 is a


PROFESSIONAL GENERALISTS
D
DS
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80
70
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V2 0
-10
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-30
-40
-50
-60
-70
-80
-60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60
V3

Figure 1

scatterplot of V_2 versus V_3 for all 129 professional generalists; axes have been drawn <u>within</u> this plot to show the separation of psychologically high and low scores on these dimensions. The lines are tilted slightly in relation to the V_2 and V_3 axes proper, but are in good agreement with the Digit Span and Arithmetic vectors shown in the corner. The neutral line for Digit Span is drawn through an antimode for the V_2 scores, resulting in a clear separation of the group into Externalizer (low V_2) and Internalizer (high V_2) segments. The neutral line for Arithmetic is drawn through a peak for the V_3 scores, resulting in a relative absence of undercompensated (low V_3) and overcompensated (high V_3) individuals. Figures 2 through 6 duplicate the distribution of Figure 1, but use various symbols to identify the members of the five professions contributing to the total reference group.

In Figure 2 we may observe that the Attorneys are well-scattered throughout the reference group, except that they do not fall appreciably below the line drawn to separate Externalizers from Internalizers. None of the Attorneys in this groups is a clear Externalizer.

In Figure 3 we may observe that the Science Teachers are also well-scattered throughout the reference group. It may be seen that the Science Teachers include more than their proportionate share of Professional Generalist Externalizers.

In Figure 4 we may observe that the Pharmacists also are well-scattered. It may be noted, in addition, that all of the Externalizer Pharmacists are hospital pharmacists, and that all of the community pharmacists are Internalizers, as defined by V_2. A similar but not quite so perfect relationship with V_3 is also present. These effects <u>are</u> in directions that the PAS would expect. It is necessary only to recall that Digit Span (V_2) is interpreted as measuring a <u>primitive</u> behavior tendency, whereas the actual behavior of the professional generalist is a function of compensatory mechanisms. It is evident from Figure 4 that the Externalizers, regardless of Arithmetic (V_3) scores, find the hospital environment relatively non-threatening. Among the Internalizers, those with low V_3 may be regarded as using their hospital position as a base for security, whereas those with high V_3 are psychologically drawn away from such a base to become community pharmacists--a role they find more rewarding than threatening.

In Figure 5 we may observe these same mechanisms working among the mathematicians, physicists, and programmers. It should be no surprise that very few of these cases display low scores on V_3 in view of the stringent intellectual demands in these jobs. What may be more interesting is to discover no "programmers" among the Externalizers and no "physicists" among the extreme Internalizers, while the "mathematicians" are distributed along the whole V_2 dimension. Evidently the compensated Internalizers are driven in the direction of a relatively <u>applied</u> activity having utility in the

PROFESSIONAL GENERALISTS: HIGHLIGHTING ATTORNEYS

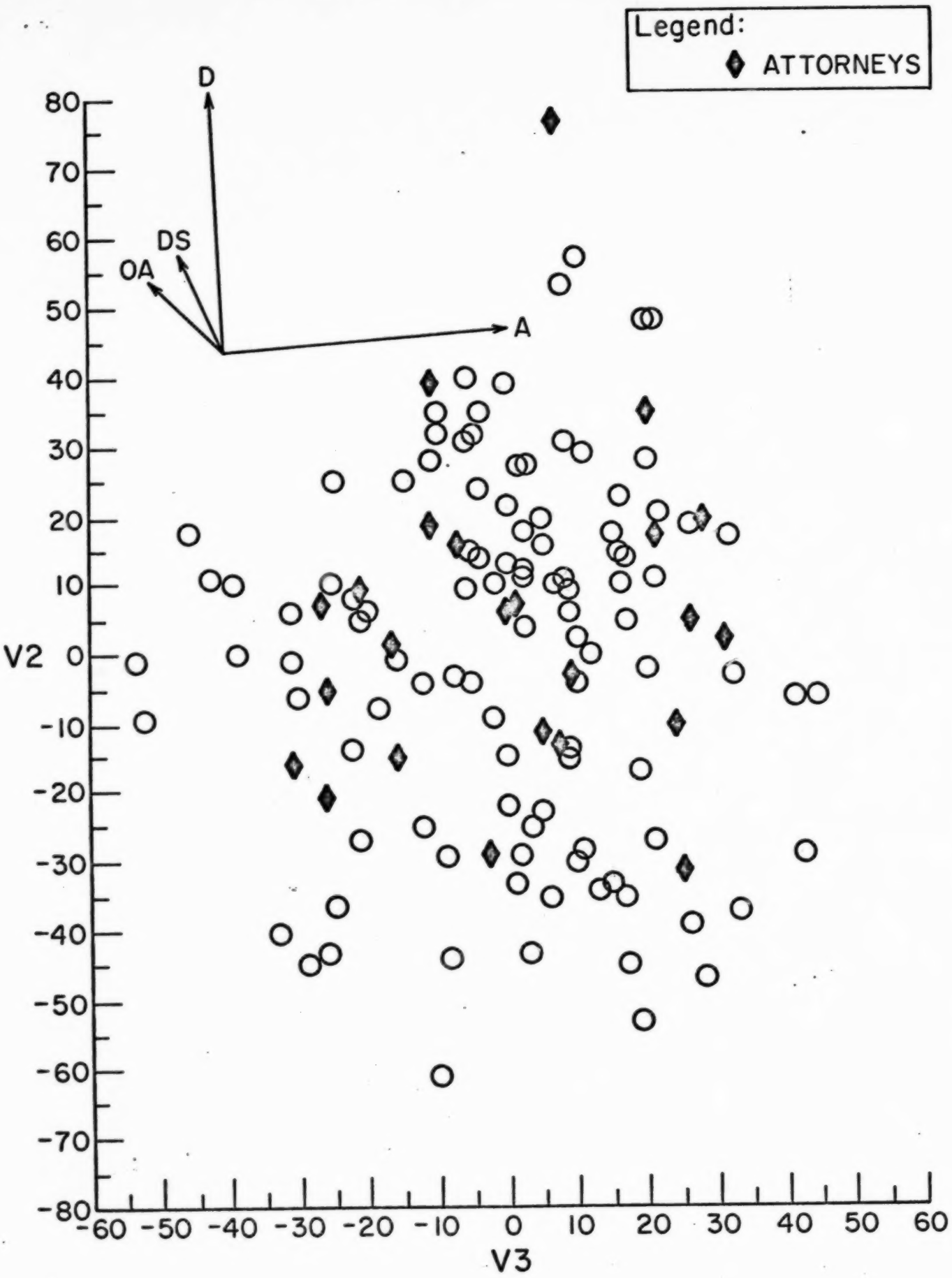

Figure 2

PROFESSIONAL GENERALISTS: HIGHLIGHTING SCIENCE TEACHERS

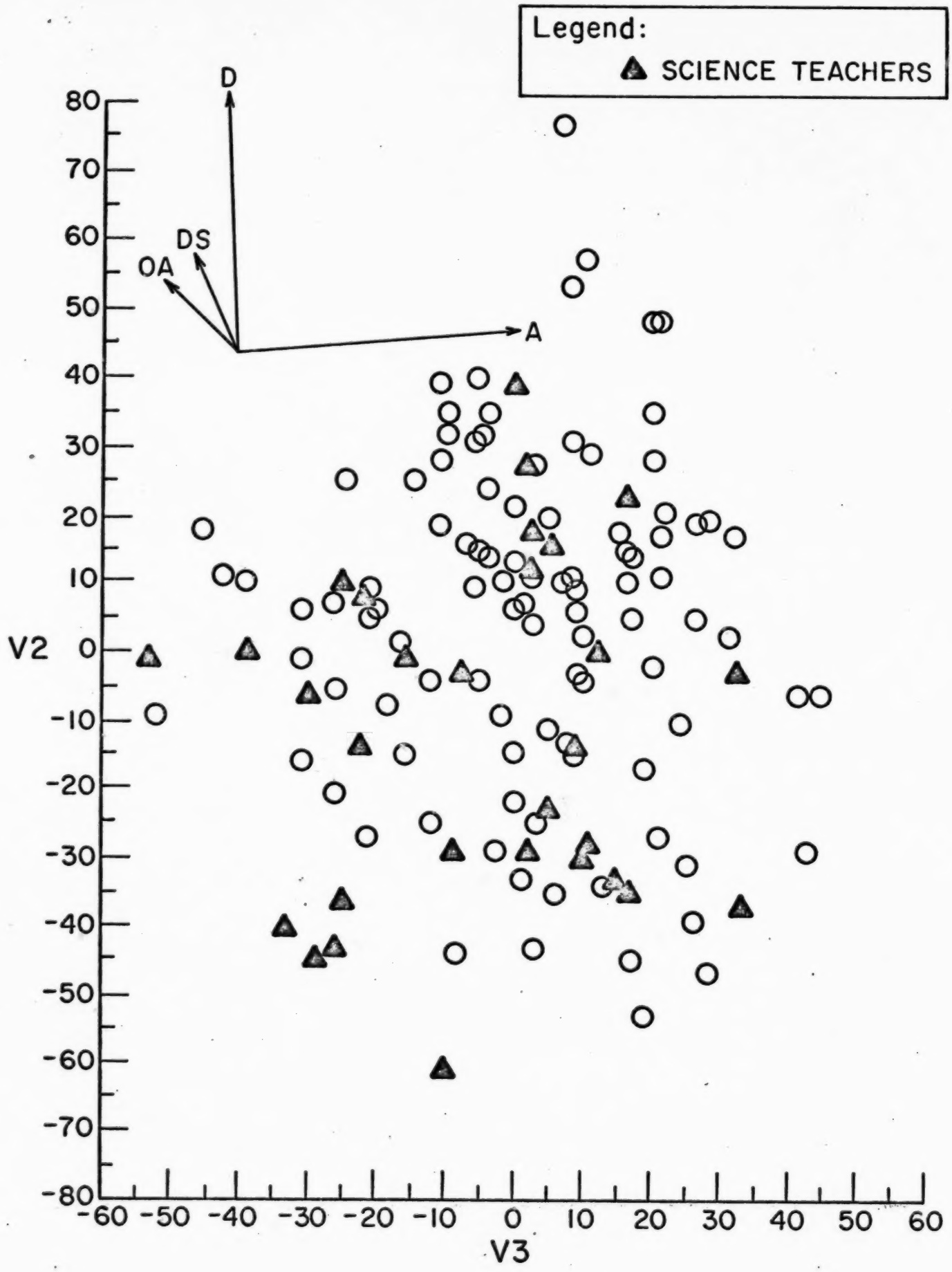

Figure 3

PROFESSIONAL GENERALISTS: HIGHLIGHTING PHARMACISTS

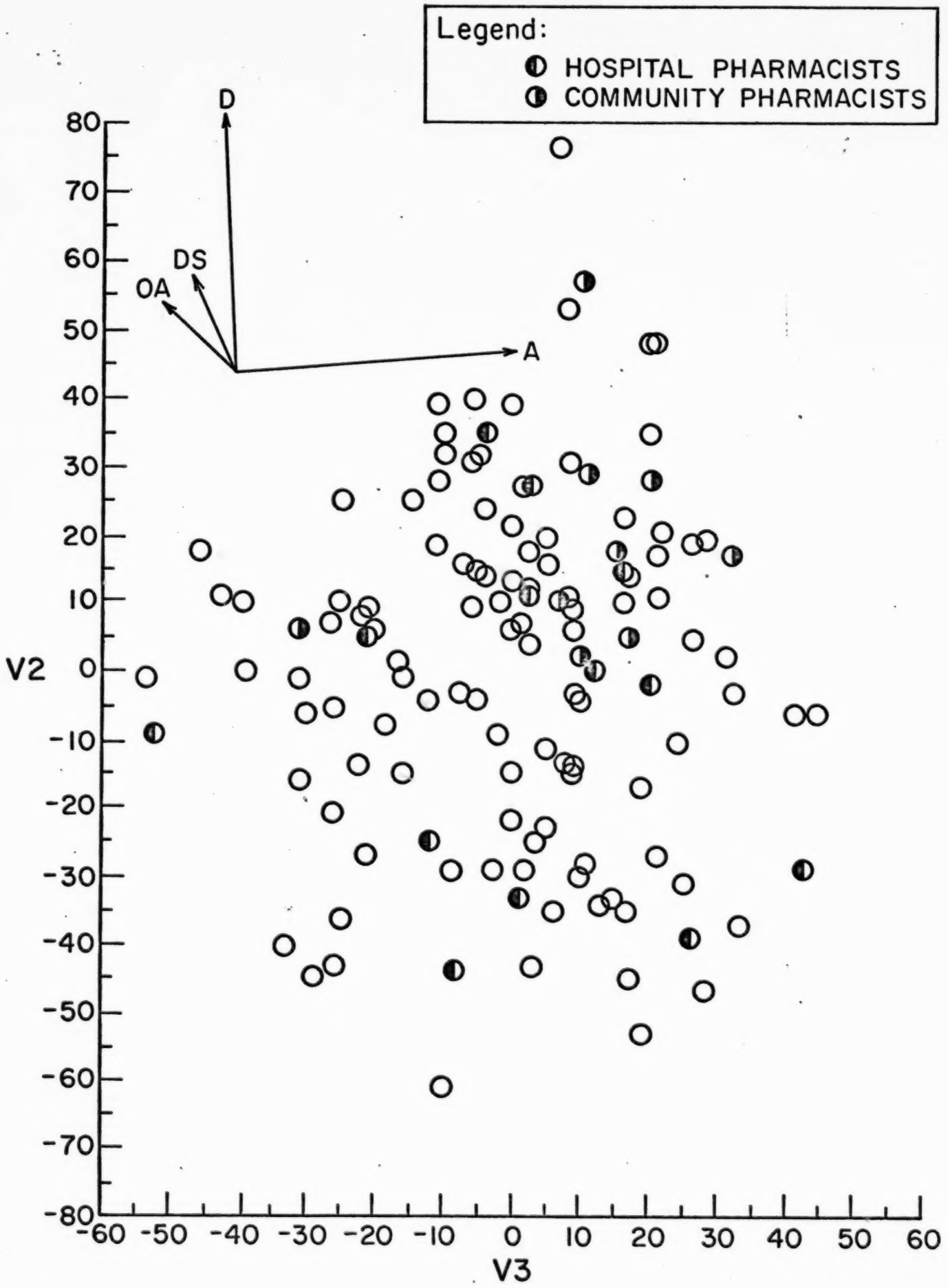

Figure 4

PROFESSIONAL GENERALIST: HIGHLIGHTING MATHEMATICIANS, PHYSICISTS AND PROGRAMMERS

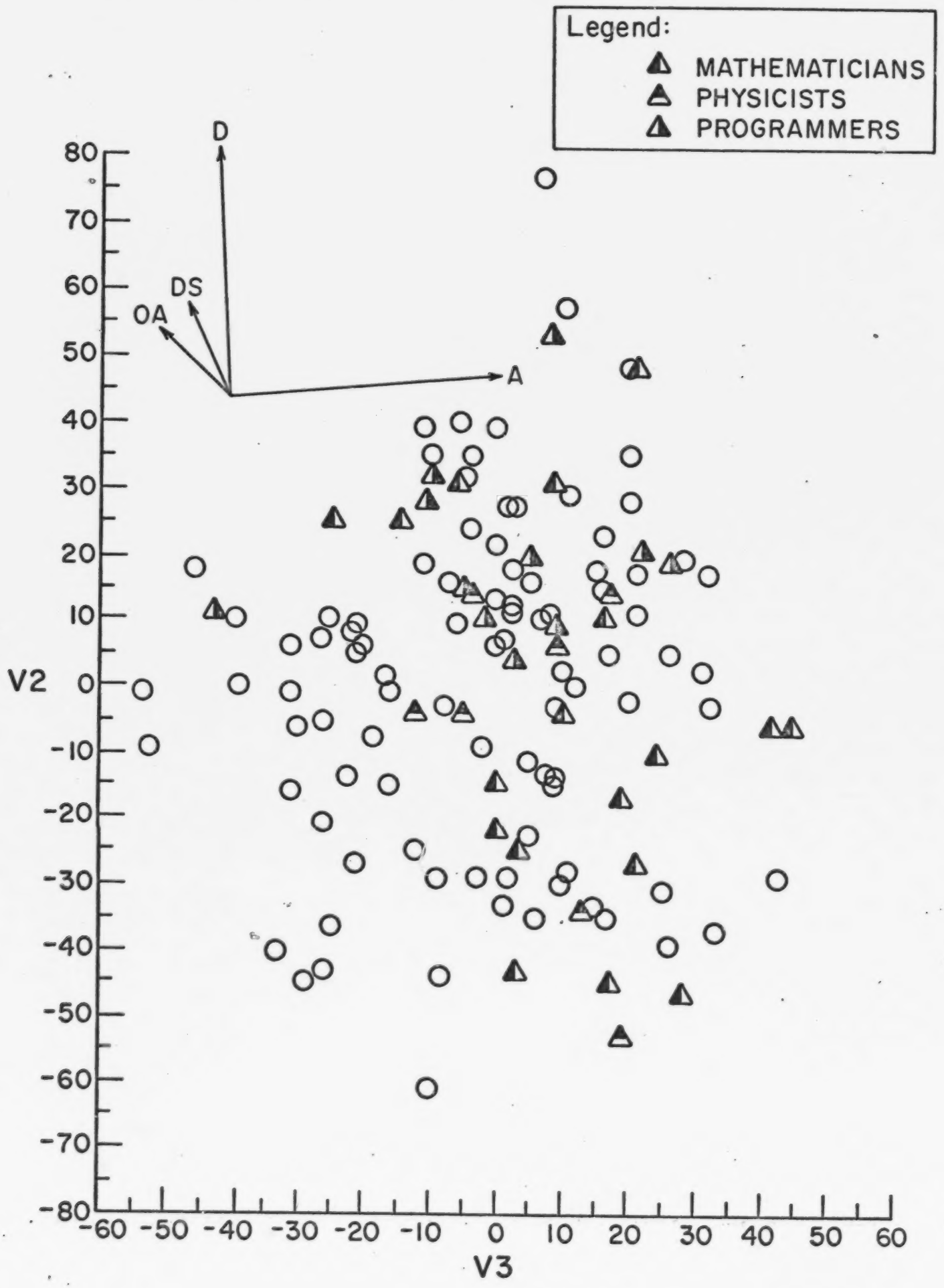

Figure 5

PROFESSIONAL GENERALISTS:
HIGHLIGHTING PHYSICIANS

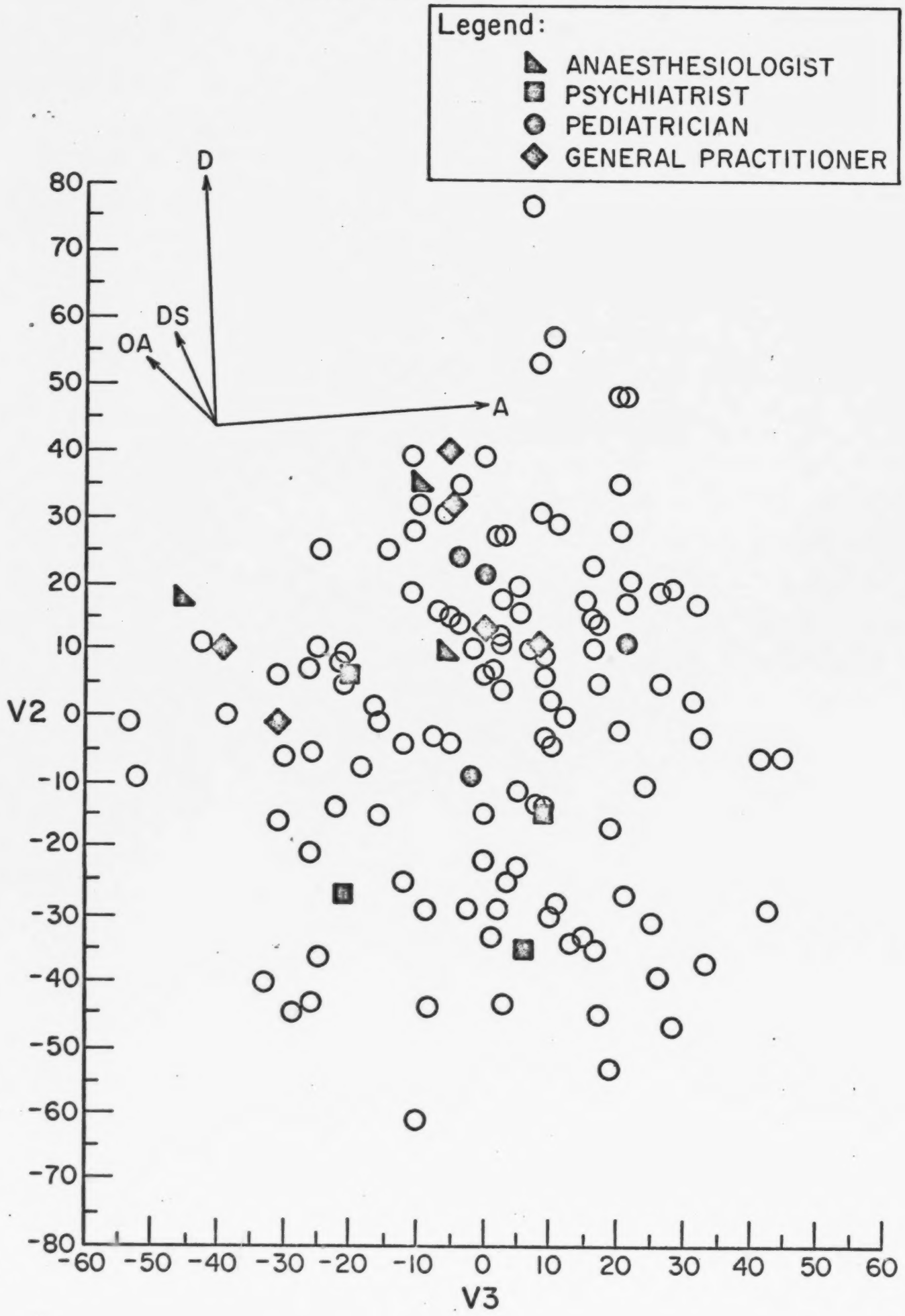

Figure 6

real world, whereas the compensated Externalizers are driven away from the real world in the direction of highly theoretical activity.

The specialties of the Physicians are shown in Figure 6. The only Externalizers tend to be undercompensated, and are found to be psychiatrists; these persons have in effect found a way directly to serve their primitive Externalizer needs for interpersonal involvement. Otherwise, these physicians are all clearly Internalizers, enabling them to maintain an essential degree of detachment in their relationships with their patients, and at the same time to see their work as having practical importance.

The fourth and fifth dimensions of variability (V_4 and V_5) within the professional generalist reference group are probably not irrelevant, in view of the magnitudes of their associated latent roots. V_5 can be clearly identified with the Picture Arrangement subtest, the PAS measure of primitive acceptability cited earlier in this discussion. Unfortuantely, the PAS2 program does not provide detailed output for individuals beyond V_4. V_4 is not clearly identifiable with any single WAIS subtest, though there are some indications that it may be psychologically identifiable with the strength of compensation associated with the A-U dimension of the PAS. The nature of the A-U pattern could be expected to be particularly important when considering those professionals who deal with others as individual persons, e. g., psychiatrists.

B. The Procedural Specialist

In terms of the quality of its definition (Table 5) the Procedural Specialist reference group is much more typical than was the Professional Generalist group. The representatives of this group are less frequent in our sample (5 Attorneys and 9 Physicians), but those who occur conform quite closely to a common pattern. Thus, with only 15 cases, a span of only .470 is obtained. (Since the value for span varies inversely with the square root of the number of cases, a sample of 15 professional generalists would give a span of .725 and this would be regarded as undesirably high.)

By examining the PAS formulations of these 15 protocols, it is easy to see that the common pattern may be represented as a primitive $E^{+}RU$, becoming a basic i*p*u* and a contact $i/r_o a'$, Gittinger says of the $i/r_o a'$ adjustment (1, p. 87):

> A common and quite efficient adaptation of i*f*u* ... an intellectually oriented, socially relating individual ... a well-organized student who takes his studies very seriously and expects to be recognized and rewarded for his efforts ... status, prestige, personal rights are all important to him ... leadership is not as important, he prefers the role of consultant or authority ... many college teachers, lawyers and physicians will have this adjustment ... he usually is "set in his ways," has strong

Table 5

Reference Group Characterization for Procedural Specialists

Span = .470

	WTS	Variables less NL										
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1470	92	55	-536	29	129	-555	-248	-121	-298	-416	113	-167
Covariances													
NL	106	-42	39	-44	-05	-74	-53	-100	38	-86	-23	-50	-00
I-NL	-42	49	02	-06	-03	69	29	48	-67	30	27	24	44
C-NL	39	02	256	-88	-94	-71	53	10	-03	-52	-86	-150	-35
D-NL	-44	-06	-88	241	58	37	-95	31	-20	17	-26	64	22
A-NL	-05	-03	-94	58	108	-32	-14	-03	-37	-11	41	75	02
S-NL	-74	69	-71	37	-32	249	49	15	-144	62	78	91	81
PA-NL	-53	29	53	-95	-14	49	491	24	-247	25	48	-57	28
PC-NL	-100	48	10	31	-03	15	24	194	07	76	24	35	-20
BD-NL	38	-67	-03	-20	-37	-144	-247	07	315	34	-56	-11	-89
OA-NL	-86	30	-52	17	-11	62	25	76	34	152	56	31	04
DS-NL	-23	27	-86	-26	41	78	48	24	-56	56	152	82	26
Q_1	-50	24	-150	64	75	91	-57	35	-11	31	82	212	49
Q_2	-00	44	-35	22	02	81	28	-20	-89	04	26	49	156
Eigenvectors													Roots
I	-17	15	-07	-03	03	34	65	09	-55	10	20	09	18	822
II	16	-07	50	-35	-19	-28	41	-11	-05	-18	-20	-46	-12	690
III	-36	09	15	-10	-18	-02	11	61	35	47	05	-05	-24	372
IV	-10	18	44	31	-32	43	-37	11	-23	-04	-30	-19	23	299
V	-13	-10	-02	68	29	-39	21	23	-17	-11	-31	-09	-18	280
VI	-04	-20	-32	28	-28	25	24	-46	26	38	-20	-33	-06	178
VII	05	08	-01	01	-05	-32	17	07	26	14	-21	12	84	144
VIII	11	10	-01	09	22	-22	-24	-01	-22	36	50	-60	17	123
IX	23	-19	55	40	-06	03	17	-17	21	11	46	34	-02	97
X	-31	13	30	-16	37	-12	-11	-44	-17	48	-30	25	-09	81
XI	-32	22	14	02	52	32	13	-10	47	-35	09	-26	11	44
XII	71	10	02	-04	39	31	08	25	08	26	-30	-01	-08	43
XIII	16	87	-10	17	-24	-19	09	-17	09	-05	05	08	-20	34

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

> likes and dislikes, and is very concerned that all rules and regulations are understood and followed ... he is the kind of person (about whom) most people will say, "Don't try to argue with him. He has his mind made up."

The pattern appears to be equally common among men and women, and Gittinger's description appears to apply equally to both sexes. Among the 200 most similar cases in the master file, 12 are from the norm samples, and these are 6 men and 6 women. It is interesting to note that this group is more common in the norm sample than the professional generalist despite the fact that this group has a higher ability level, as measured either by Normal Level or by Wechsler IQ. However, this may be at least partly a function of bias in NL29 as applied to this group, since 7 of the NL computations overestimate the clinical criterion while only 1 underestimates; 10 are "on the nose."

There is sufficient variation within this group of 15 subjects to define two intra-group dimensions, V_1 and V_2. The cases are plotted against these dimensions in Figure 7. At least five of the WAIS subtests participate in this variability, and no simple identification of the dimensions seems possible. In Figure 7 it is possible to draw a line that almost perfectly separates the physicians from the attorneys; one's standing on one or the other side of this line is primarily related to Picture Arrangement scores, those of the attorneys being relatively higher.

Returning to first principles in PAS terms, it appears that the members of this reference group depend primarily upon their mastery of some unusually complex technique, which they handle with sufficient consistency to produce reliable and valuable results. In the professional context, this is a valid exploitation of high-level rote skills; in the interpersonal context, this may not always be a congenial pattern. Creativity is distinctly lacking and could prove to be a liability if it were too strenuously sought; a procedure requiring the uniform application of creative responses would be self-defeating. We might hypothesize that dentists could contribute many members for this reference group.

C. <u>The Intuitive Specialist</u>

Considering that this group includes only 4 individuals, the attainment of a span value of only 0.510 indicates an exceptional degree of homogeneity for this reference group. (See Table 6.) The relative uniqueness of these patterns is further confirmed by the search of the master file, which turns up no more than half a dozen cases who look as much like the group as the group members look like one another. All four group-defining members are drawn from the physician sample, and include a neurologist, a pathologist, and two pediatricians.

PROCEDURAL SPECIALISTS

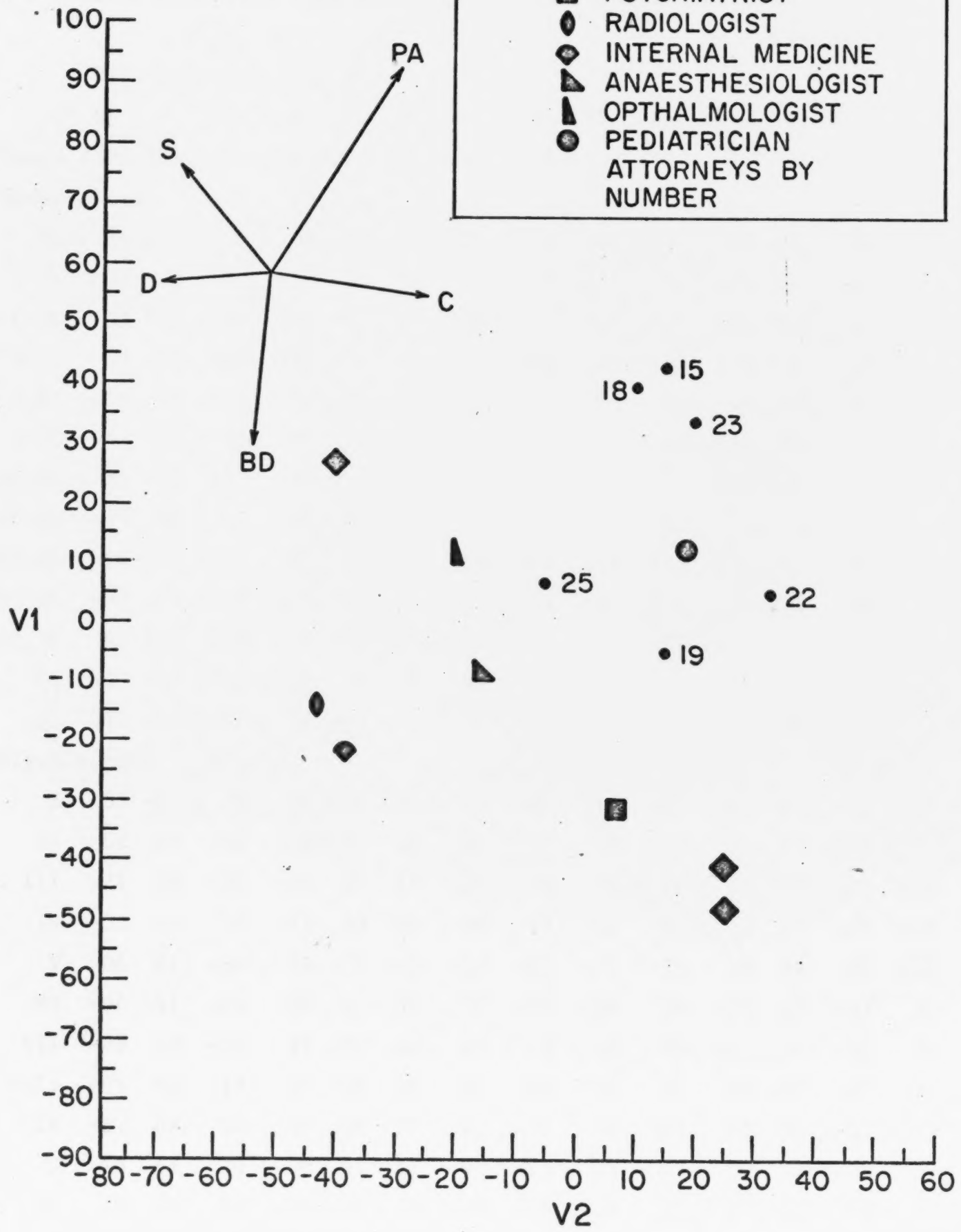

Figure 7

Table 6

Reference Group Characterization for Intuitive Specialists

Span = .510

	WTS Variables less NL												
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1356	114	274	-584	-299	292	-258	-236	-307	-157	11	150	-175
Covariances													
NL	24	-31	39	52	-08	-43	25	-44	40	-09	47	-07	18
I-NL	-31	73	-12	-55	12	91	-77	98	-112	-43	-146	-39	-22
C-NL	39	-12	388	265	-51	-56	130	02	-159	-205	161	-382	-10
D-NL	52	-55	265	216	-40	-96	120	-66	-26	-115	176	-219	16
A-NL	-08	12	-51	-40	08	20	-30	13	05	19	-45	44	-00
S-NL	-43	91	-56	-96	20	118	-107	121	-121	-30	-194	-08	-26
PA-NL	25	-77	130	120	-30	-107	157	-88	44	-02	255	-101	-03
PC-NL	-44	98	02	-66	13	121	-88	136	-163	-63	-175	-76	-35
BD-NL	40	-112	-159	-26	05	-121	44	-163	261	154	131	249	49
OA-NL	-09	-43	-205	-115	19	-30	-02	-63	154	149	37	225	10
DS-NL	47	-146	161	176	-45	-194	255	-175	131	37	429	-96	06
Q_1	-07	-39	-382	-219	44	-08	-101	-76	249	225	-96	425	38
Q_2	18	-22	-10	16	-00	-26	-03	-35	49	10	06	38	19
Eigenvectors													Roots
I	05	-04	55	37	-07	-11	23	-03	-19	-25	32	-54	-02 1389
II	08	-25	-09	10	-03	-31	26	-35	45	23	54	27	07 1072
III	-21	10	-30	-40	01	17	24	24	-34	22	55	-20	-21 249
IV	-04	06	58	-11	00	09	00	12	-30	-02	19	71	-04 129
V	06	01	-50	58	-02	-03	-11	-01	-45	-29	19	26	05 104
VI	-04	-11	-04	09	-02	-18	70	-15	-34	29	-47	08	-07 90
VII	-09	13	-05	29	-00	28	43	58	47	-19	-03	14	-10 76
VIII	-05	04	12	47	02	15	-29	18	-02	79	02	-07	-03 73
IX	-03	08	02	07	01	79	13	-59	04	-03	02	-00	-02 63
X	-10	91	00	06	01	-29	04	-23	08	03	02	02	-08 52
XI	70	22	-03	-12	-01	13	16	16	-08	13	07	-03	60 43
XII	-65	-01	02	01	08	-01	05	01	-02	-01	02	-02	75 37
XIII	07	-03	03	03	99	-03	04	-01	-01	-03	02	-02	-05 34

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

In PAS terms, these women are primitive $E^{+}FU$, remain efu at the basic level, and become i'r'u at the contact level; the Digit Symbol scores are consistently high, suggesting the availability of energy for maintenance of the contact adjustment. Gittinger says of the closely related i'r'a' adjustment (1, p. 145):

> This is the most common and, under the right circumstances, the most productive of the (basic) efu adjustments ... the individual is a warm, involving, empathic, emotionally sensitive, insightful person who tends to be socially somewhat passive and detached ... Normal Level is an extremely important factor in determining efficiency ... more so than (for) any other adjustment, this person's productivity and psychological state depend upon his working conditions .. he rarely can work with people he does not like or on jobs that do not interest him ... he is particularly well suited for tasks that require fine visual (or empirical) discrimination based on repeated experience .. he seeks vicarious experience (and is) a curious, probing person ...
>
> The e'r'u is similar ... (but) has less need to be an active, relating person.

Individuals functioning in accord with this personality pattern are going to give the impression of operating "by feel"--intuitively--because they will often be unable to verbalize or systematically to rationalize the basis for their judgments. This may make it appear to be a minor miracle for such a person to graduate from medical school, but may nevertheless be an appropriate or even necessary way to operate in such specialties as those represented. Normatively, the pattern is predominantly female, and might be taken as an operational definition of "woman's intuition," but male representatives of the pattern are known.

D. The Realtor Sample

Our analysis of the Realtor sample has resulted in a clean separation into three distinct reference groups; these are reported in Tables 7, 8, and 9, and plots of the individuals against the two most important dimensions of each group appear as Figures 8, 9, and 10, respectively. Before looking at these three groups separately, we may note a tendency for the sales personnel and brokers to segregate unevenly among the groups, as follows:

	Group A	Group B	Group C
Without broker license:	8	8	2
With broker license:	2	5	5

Actually not all those with licenses are practicing as brokers; the practicing brokers show a stronger tendency to come from Group C.

Table 7

Reference Group Characterization for Realtors A

Span = .501

	WTS	Variables less NL										
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1216	-16	220	-169	-39	65	-87	-66	-116	-136	-109	100	-200
Covariances													
NL	85	32	-34	23	23	04	-73	-53	42	-39	-91	-43	25
I-NL	32	153	30	-26	-17	-77	-48	-34	09	-50	10	-06	-30
C-NL	-34	30	325	-14	01	-36	72	-20	-185	20	-105	-45	29
D-NL	23	-26	-14	70	77	10	-36	-38	47	00	-49	-30	20
A-NL	23	-17	01	77	172	-42	-51	-69	59	-39	-33	-89	22
S-NL	04	-77	-36	10	-42	223	-40	-54	-10	104	45	50	-32
PA-NL	-73	-48	72	-36	-51	-40	153	114	-64	23	62	27	07
PC-NL	-53	-34	-20	-38	-69	-54	114	123	-08	-01	63	50	16
BD-NL	42	09	-185	47	59	-10	-64	-08	166	-20	30	25	-07
OA-NL	-39	-50	20	00	-39	104	23	-01	-20	104	14	72	-47
DS-NL	-91	10	-105	-49	-33	45	62	63	30	14	315	58	-63
Q_1	-43	-06	-45	-30	-89	50	27	50	25	72	58	120	-40
Q_2	25	-30	29	20	22	-32	07	16	-07	-47	-63	-40	80
Eigenvectors													Roots
I	-15	-09	-54	-09	-20	23	08	19	22	14	60	29	-17	613
II	-27	-06	52	-20	-31	01	42	25	-44	16	16	14	-03	570
III	06	-27	10	10	-08	72	-21	-29	-12	39	-24	13	-08	392
IV	-08	-68	-19	19	16	-06	35	35	11	04	-30	-03	30	274
V	-19	-18	24	19	61	13	05	-20	-06	-01	55	-32	-02	261
VI	-25	15	20	22	30	-27	08	-01	37	42	-17	44	-34	156
VII	26	22	38	24	-07	27	07	17	42	-11	19	24	54	96
VIII	44	23	-05	05	01	21	61	06	15	13	-08	-39	-37	74
IX	-20	19	-17	82	-33	-07	-00	-00	-25	08	04	-16	04	54
X	-18	45	-31	-06	46	30	20	13	-38	-09	-20	26	22	46
XI	46	-10	-14	03	03	-33	26	-49	-27	26	19	32	26	42
XII	45	-01	03	08	21	-09	-40	61	-28	32	13	-01	-09	40
XIII	-23	22	-10	-27	-05	-07	-05	-02	16	64	-00	-42	44	38

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

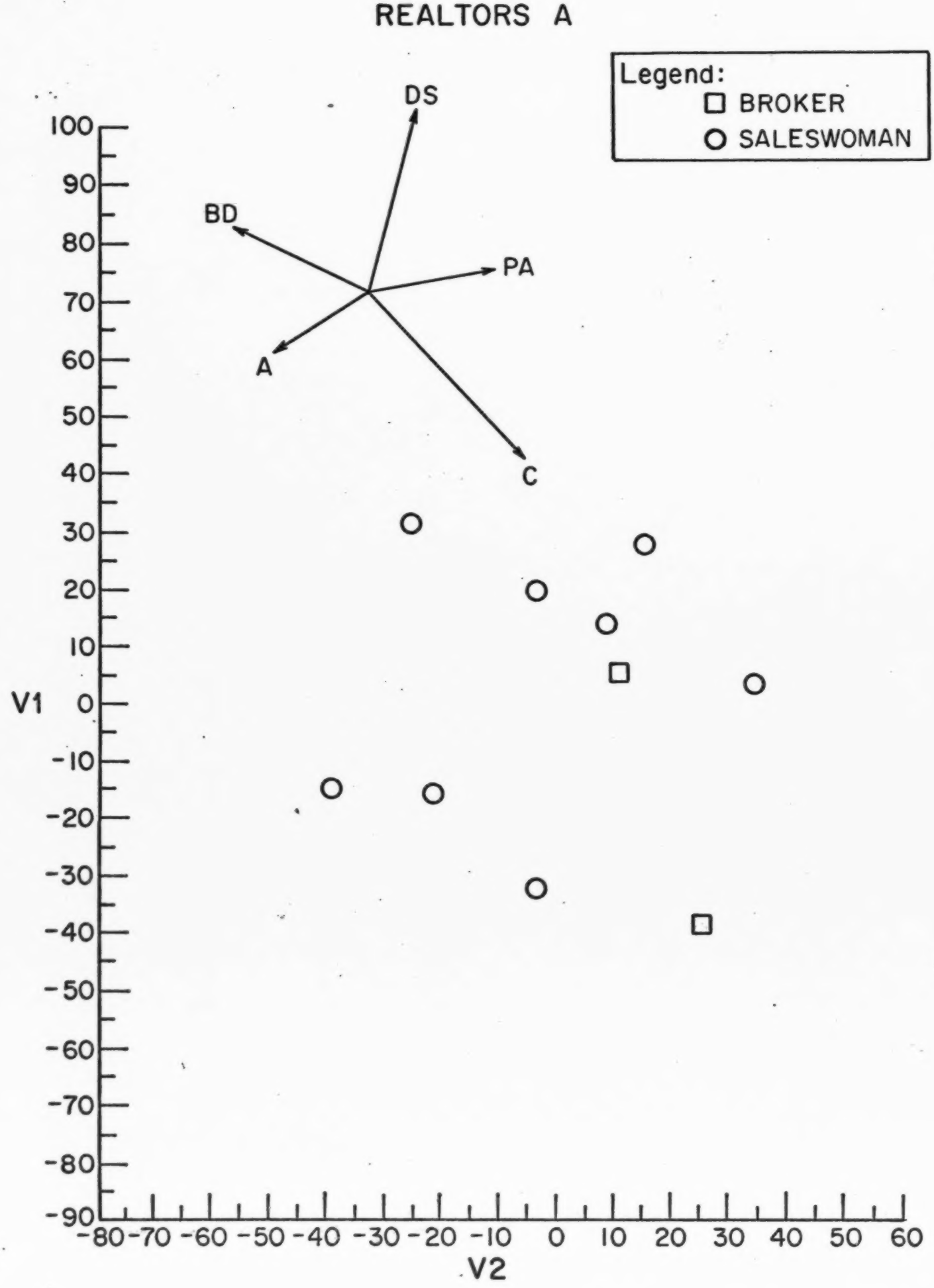
REALTORS A
Legend:
BROKER
SALESWOMAN
DS
BD
PA
A
C
100
90
80
70
60
50
40
30
20
10
V1 0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60
V2

Figure 8

Table 8

Reference Group Characterization for Realtors B

Span = .609

	WTS	Variables less NL										
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1220	23	269	-225	25	98	-558	-317	-217	-293	-237	62	-115
Covariances													
NL	156	16	-29	-06	40	34	47	58	60	-45	-66	-29	-53
I-NL	16	209	49	12	-17	-26	-58	20	-276	-105	-237	14	-134
C-N1	-29	49	132	-68	-66	07	-69	43	-60	-114	-34	09	-21
D-NL	-06	12	-68	384	-275	-34	43	-37	03	243	196	07	80
A-NL	40	-17	-66	-275	729	-46	84	-59	-110	-447	-538	-41	-175
S-NL	34	-26	07	-34	-46	123	54	59	18	87	173	-54	83
PA-NL	47	-58	-69	43	84	54	185	05	70	40	48	-14	44
PC-NL	58	20	43	-37	-59	59	05	129	00	13	09	-18	30
BD-NL	60	-276	-60	03	-110	18	70	00	535	145	382	-04	147
OA-NL	-45	-105	-114	243	-447	87	40	13	145	599	555	02	297
DS-NL	-66	-237	-34	196	-538	173	48	09	382	555	883	-36	377
Q_1	-29	14	09	07	-41	-54	-14	-18	-04	02	-36	116	25
Q_2	-53	-134	-21	80	-175	83	44	30	147	297	377	25	290
Eigenvectors													Roots
I	-04	-15	-04	20	-45	09	03	02	26	46	61	-00	27 2282
II	09	-40	-11	-31	50	07	19	-03	60	-15	16	-06	11 837
III	03	-04	-44	52	40	-06	36	-19	-19	36	-16	-02	09 456
IV	17	-05	-07	44	-29	-38	-06	-14	54	-22	-22	12	-34 390
V	63	19	-03	06	-13	36	34	44	04	-02	-05	-28	-17 316
VI	15	-00	-16	-37	-11	-15	-13	25	18	52	-50	34	19 226
VII	-07	-06	33	27	-03	00	34	28	-01	-34	-13	42	56 188
VIII	-08	16	-11	-35	-22	04	62	-31	-05	-02	12	43	-30 137
IX	-51	-32	21	-03	-21	-03	37	18	06	16	-33	-45	-16 102
X	29	-08	15	-10	-25	21	03	-67	-00	-04	-31	-27	39 69
XI	-23	79	16	00	17	-06	09	-06	40	11	-01	-21	17 63
XII	22	-11	74	11	29	-01	02	-14	-00	40	05	18	-29 54
XIII	-28	-00	-07	20	02	80	-21	-05	21	02	-21	27	-17 44

*In this table all decimal points have been omitted to save space; unless otherwise -dicated, all figures are reported to two decimals.

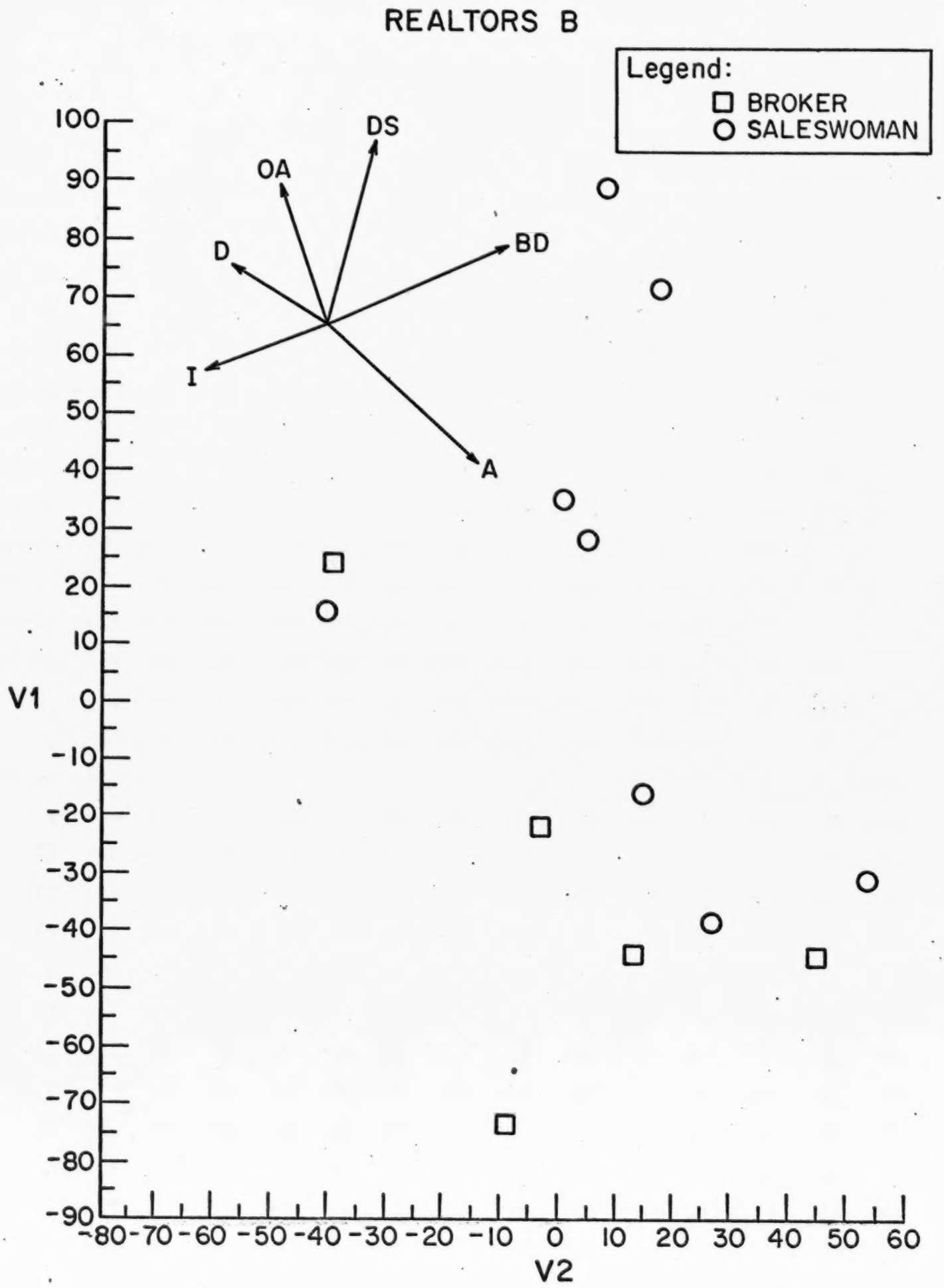
REALTORS B
Legend:
BROKER
SALESWOMAN
DS
OA
D
BD
I
A
100
90
80
70
60
50
40
30
20
10
V1 0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60
V2

Figure 9

Table 9

Reference Group Characterization for Realtors C

Span = .729

	WTS	Variables less NL											
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1116	97	95	-09	162	-252	-400	-89	-162	-26	-75	143	57
Covariances													
NL	170	25	50	-133	-49	108	-03	-72	-34	-52	88	115	-13
I-NL	25	199	142	-99	48	41	-129	-247	-89	-173	57	68	-121
C-NL	50	142	297	-18	41	89	12	-287	-202	-281	24	178	-64
D-NL	-133	-99	-18	317	-117	-168	-49	28	-137	136	29	-43	-135
A-NL	-49	48	41	-117	230	98	145	40	159	-225	-190	-58	173
S-NL	108	41	89	-168	98	160	97	-49	63	-198	-66	76	79
PA-NL	-03	-129	12	-49	145	97	310	202	137	-95	-181	-16	327
PC-NL	-72	-247	-287	28	40	-49	202	432	269	243	-141	-190	285
BD-NL	-34	-89	-202	-137	159	63	137	269	332	17	-204	-163	200
OA-NL	-52	-173	-281	136	-225	-198	-95	243	17	479	133	-115	-12
DS-NL	88	57	24	29	-190	-66	-181	-141	-204	133	250	93	-163
Q_1	115	68	178	-43	-58	76	-16	-190	-163	-115	93	167	-67
Q_2	-13	-121	-64	-135	173	79	327	285	200	-12	-163	-67	453
Eigenvectors													Roots
I	-10	-25	-29	-05	16	00	31	51	38	17	-25	-23	42 1633
II	-10	-17	-30	32	-34	-31	-25	17	-11	58	22	-13	-24 1281
III	-49	-03	17	60	21	-23	07	-04	-09	-27	-36	-19	-15 504
IV	-11	28	-31	-28	21	00	-45	-08	45	-08	-15	-30	-40 474
V	35	-42	-08	20	-21	31	15	16	21	-22	-21	17	-55 234
VI	-18	-04	32	-22	-10	07	13	-33	14	59	-52	17	-12 114
VII	-12	18	37	-31	09	-03	-04	72	-30	04	-05	04	-32 84
VIII	-03	10	-30	-14	32	-05	68	-18	-20	14	24	-14	-38 76
IX	10	15	49	30	22	03	10	07	57	20	45	-01	-08 73
X	36	02	-10	29	61	33	-28	03	-30	31	-18	04	06 67
XI	09	76	-24	30	-31	12	20	14	06	03	-21	20	05 61
XII	-41	-09	-26	-01	25	-03	-09	07	14	-03	15	80	-03 56
XIII	-49	-02	-02	04	-16	79	-03	01	-09	05	23	-21	02 53

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

REALTORS C

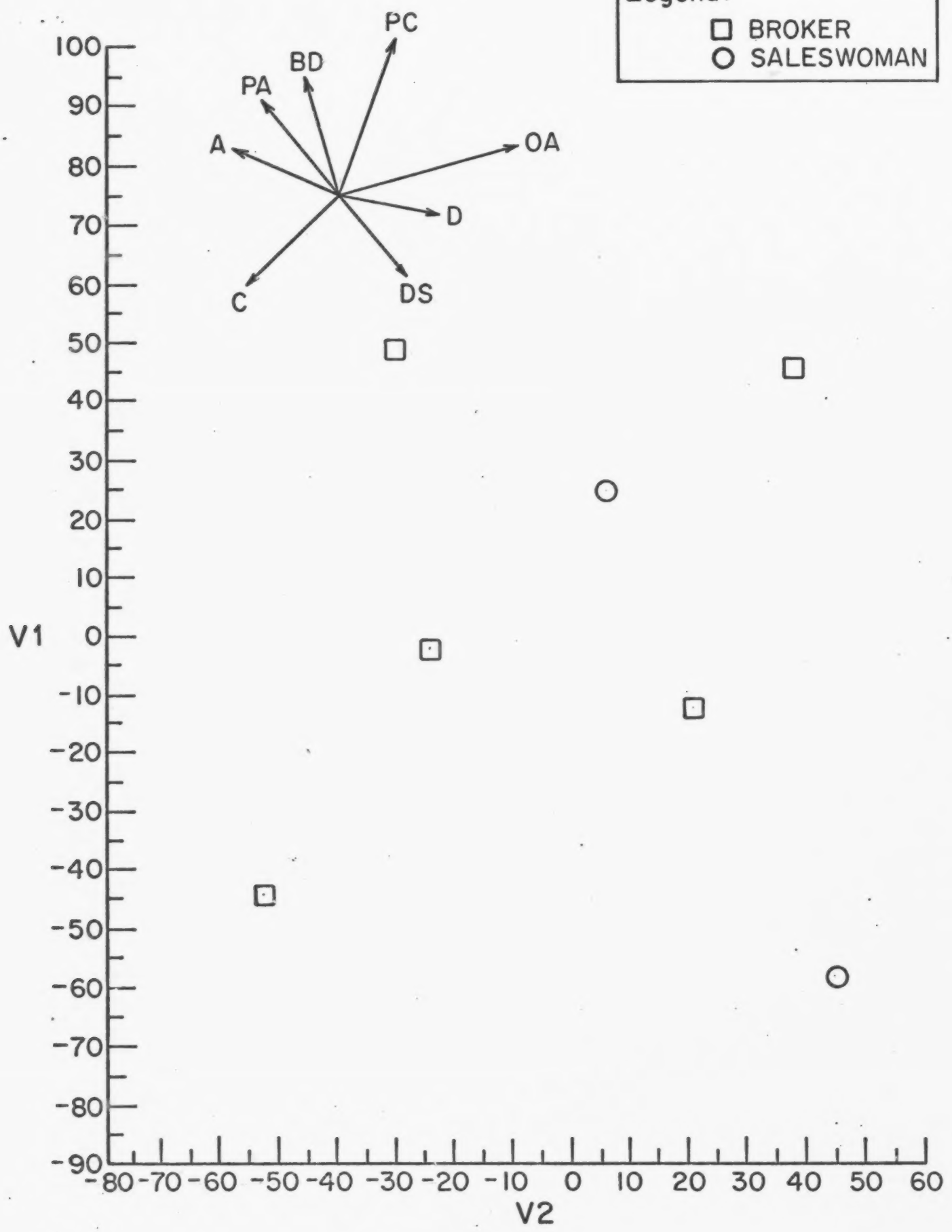

Figure 10

However, the frequencies in this table are too small to provide more than a hint of a possible relationship, and it is deserving of mention only because it seems psychologically consistent with the character of each group.

E. Realtors A

This group yields a span of 0.501 on the basis of data for only 10 subjects, and is inherently relatively homogeneous. There may be significant internal group variability, but it is not clearly identifiable with any WAIS subtest of PAS function. Indications are that NL29 works well for this group, that patterns of this type occur about equally often among men and women, and that the pattern is relatively more common within the WAIS norming population than those we have considered above.

In PAS terms, the members of this group are consistently primitive A, basic E (either e or e*), basic F (either f or f*), and basic A. All these variations may be regarded as exploitations of the personal acceptability implied by the A. In an academic setting this is not an advantageous adjustment, beacuse the individual tends to generate expectations that he will later be unable to live up to, and this commonly eventuates in classification as an under-achiever. On the other hand, within the short-run context of a salesman-customer relationship, the ability of the A to make a good impression without really trying is a distinct asset.

F. Realtors B

This group yields a span of 0.609 on the basis of data for 13 subjects, and is distinctly less homogeneous than the Realtors A. There is one very large dimension of intra-group variability, at one extreme of which the broker members of the group fall, as shown in Figure 9. Indications are that NL29 works well for this group, and that representatives of the pattern are equally likely to be men or women. The pattern, however, is normatively less common than that of Realtors A, even though the IQ levels are closely comparable. To a greater extent than for other reference groups described in this report, this one tends to find representatives among all the professions studied, even though it is defined purely in terms of certain real estate personnel.

In PAS terms, the members of this group are consistently primitive U^{+}, basic I (either i or i*), basic F (either f or f*), and basic U. The major dimension of differences within the group contrasts a high activity i/r'u with a low activity i/r'a'; the latter pole of the dimension also displays relative higher Arithmetic scores. Gittinger says of the i/r'a' (1, p.165);

> This is the most common and effective of the basic i*fu adjustments ... the i/r'a' develops many strong social values that are extremely important in helping him learn

how to "discharge" his intensity in the most useful and effective ways .. he does not set out to conform to the world in which he wants to live, he is more inclined to seek out the world in which his ways and beliefs are tolerated or accepted .. the i/r'a' is easily discouraged and easily disillusioned ... the primary means of handling this problem is by being interested and enthusiastic ... most i/r'a' individuals will work best against a well-defined deadline ... their drive to achieve is plagued by much self-doubt, inferiority anxiety and a desire to escape ... unexpected depressions and even suicide can occur in i/r'a' individuals who give every external indication of being highly successful and highly competent.

The i/r'u is similar ... except that he does not have social anxiety .. he is more independent ... and preoccupied with his own interests and enthusiasms ... he will fit into an environment where individual intensity is recognized and rewarded.

G. Realtors C

This group yields a span of 0.719, which is numerically the highest we have yet encountered. Since only 7 subjects are involved, however, this is not as bad as it might seem. There are two substantial dimensions of intra-group variability, but these do not account for the large span as the index ignores the two largest dimensions. From the listing of 200 most similar cases from the master file, it may be seen that NL29 tends to underestimate clinically-judged normal level for this group, that academic underachievement is likely to be observed even in relation to such underestimates of ability, that the pattern is normatively as common as Realtors A, and that the representatives of this pattern are typically men. The pattern is even more common among norm groups of Japanese and Koreans than it is among Americans.

In PAS terms, the most striking feature of this group is the predominance of basic R, especially r*; there are only three r* subjects in this study, and all are in this group. Looking at the whole pattern, we may observe this group to be primitive IFU, basic e*r*u, and contact e/r/u or e/r/a'. Gittinger says of the e/r/a' (i, p. 298):

This is a common and efficient manifestation of (basic) e*r*u ... fundamentally he is a very individualistic person ... very selective in his interests and attitudes ... he is never a dilettante .. he has little compassion and can be ruthless in dealing with situations he does not understand ... he makes few modifications in his interests and principles in order to gain acceptance from others ... he is an individual competitor ... he is very possessive ... he has considerable imaginativeness and creativeness but

> uses these traits for his own ends ... he is willing to be a pioneer ... he recognizes that he is frequently regarded as arrogant and too aggressive ... but as he becomes involved in what he is doing, much of this anxiety is dissipated ... he will usually be notorious for his quick temper and his nervous impatience.
>
> (The e/r/u) is very similar ... the arrogance and aggressiveness are less well disguised ... the e/r/a' adjustment will be paramount while a man is on the way up and he will become e/r/u when he thinks he has arrived.

H. Social Workers

Our analysis of the Social Worker sample has yielded what appear to be the least satisfactory results in this study. It has not been possible to view these subjects from a common perspective with others, as was accomplished for five of the professions, nor has it been possible to sort them into a limited series of cleanly defined categories, as was accomplished for the realtors. Information more specific than mere identification with the social worker sample has been available for only about half of these women, leading to a relatively high uncertainty concerning the possible meaning of any groupings that might emerge. In the end, our proposed grouping leaves 7 of the 32 subjects unassigned to any reference group, and divides the remainder between two patterns, designated simply as Social Worker A and Social Worker B.

I. Social Workers A

On the basis of 15 individuals, this group yields a span index of 0.604 (Table 10), which is not particularly good. There are two major dimensions of internal group variability plotted in Figure 11, and these reflect the joint action of several subtests of the WAIS. The family of personality patterns defined by this group turns out to be typically female, but normatively fairly rare. The listing of most similar cases from the master file turns up several clinical psychology students, guidance students, occupational therapists, etc., reinforcing the identity of the group; this search also disclosed that several of our professional generalist attorneys might be counted in this group.

Because of the intra-group variability, it is difficult to isolate any one sterotypical PAS description that should fit this group better than any other. The patterns at the head of the list selected from the master file are consistently $e/r_o a'$, which is based on an IRU primitive pattern and an e*f*u basic pattern. Inasmuch as Gittinger's Atlas is written primarily about men, the following remarks appearing under e*f*u (1, p. 227) are especially interesting:

Table 10

Reference Group Characterization for Social Workers A

Span = .604

	WTS Variables less NL												
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1374	131	202	-87	-75	134	-491	-260	-209	-370	-271	53	-67
Covariances													
NL	277	-111	-152	-60	40	-51	-15	-119	80	-46	-152	32	105
I-NL	-111	154	86	-135	-24	25	-22	42	-63	-16	29	-03	-80
C-NL	-152	86	201	-93	10	83	-55	79	-125	-27	12	57	-119
D-NL	-60	-135	-93	612	-14	28	155	141	165	97	273	-20	50
A-NL	40	-24	10	-14	110	-53	-63	05	-58	17	16	84	16
S-NL	-51	25	83	28	-53	161	43	36	-33	-33	38	-35	-49
PA-NL	-15	-22	-55	155	-63	43	228	19	174	47	159	-82	53
PC-NL	-119	42	79	141	05	36	19	199	-46	56	67	27	-37
BD-NL	80	-63	-125	165	-58	-33	174	-46	422	-10	143	-49	84
OA-NL	-46	-16	-27	97	17	-33	47	56	-10	308	120	56	74
DS-NL	-152	29	12	273	16	38	159	67	143	120	563	-08	-25
Q_1	32	-03	57	-20	84	-35	-82	27	-49	56	-08	158	-38
Q_2	105	-80	-119	50	16	-49	53	-37	84	74	-25	-38	209
Eigenvectors													Roots
I	-10	-10	-12	63	-04	03	30	12	35	18	54	-06	09 1197
II	51	-27	-41	01	-01	-18	09	-29	39	-08	-32	-08	33 816
III	12	-23	-08	38	27	-19	-27	19	-44	44	-20	31	17 485
IV	07	13	-07	-53	19	-25	-00	-21	09	48	49	19	16 407
V	24	-12	06	13	34	-14	-34	-14	11	-52	34	37	-32 307
VI	-10	14	24	-03	-00	-18	-02	36	64	18	-36	40	-15 236
VII	43	-21	30	-09	02	69	28	-01	-02	15	02	30	-03 188
VIII	08	12	12	-15	34	-02	14	54	-04	-37	10	-05	61 150
IX	41	36	-43	-03	-05	-14	34	37	-21	00	02	04	-43 124
X	-21	-35	22	-05	26	-38	68	-17	-16	-09	-13	08	-15 104
XI	-04	67	04	30	07	05	18	-45	-08	-08	-14	34	26 78
XII	-09	14	-14	03	77	28	-03	-06	18	17	-16	-38	-22 55
XIII	48	18	62	17	-03	-31	-05	-06	-01	15	03	-45	-06 43

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

SOCIAL WORKERS A

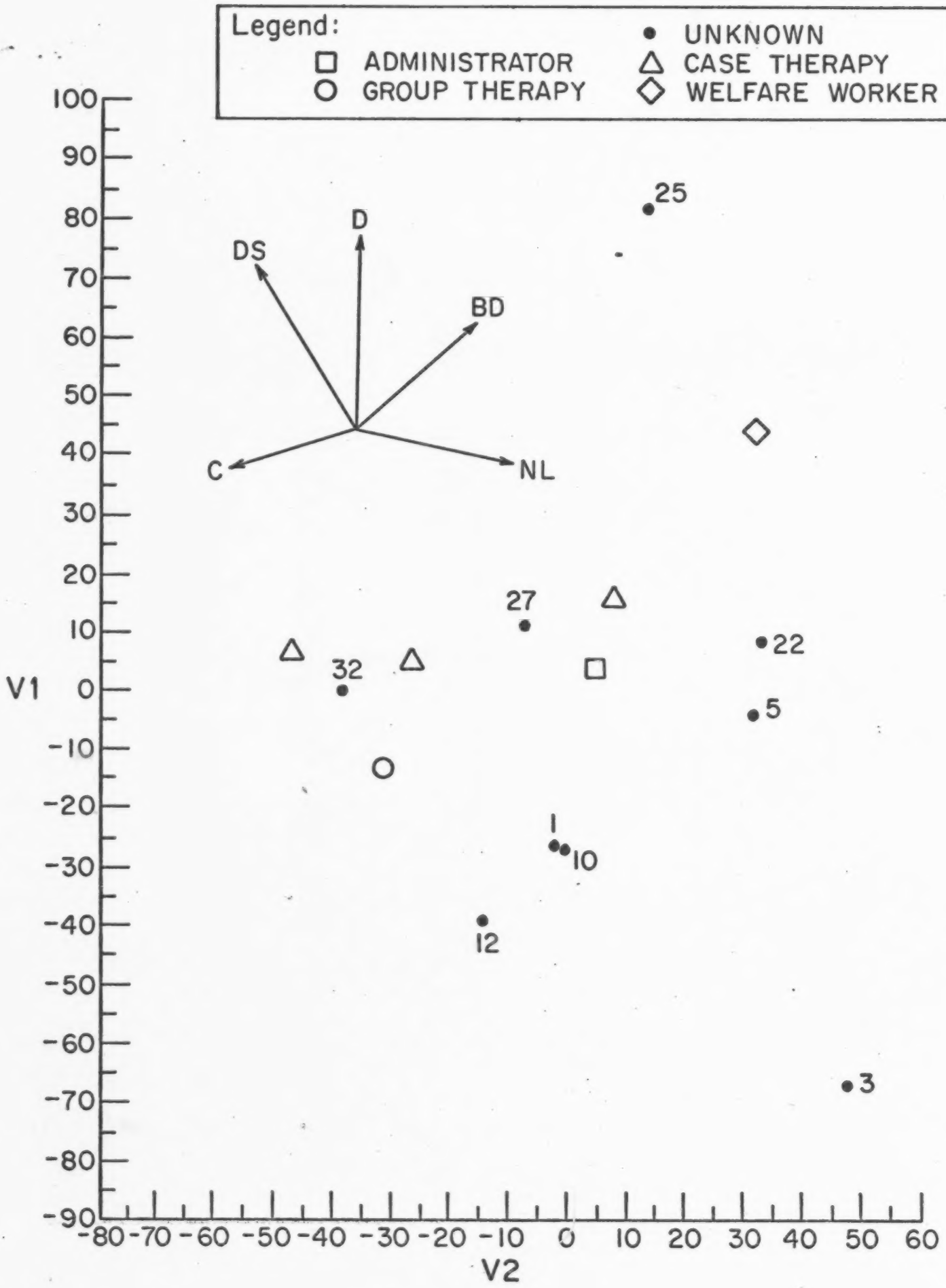

Figure 11

> Among women, this pattern will produce many highly effective nuns, nurses, and office managers. However, it is characteristic of the e*f*u woman to be more effective in the rituals, procedures and techniques of her calling than in the nuances of compassion and human understanding. She has a strong sense of responsibility but is often cold, detached and rational.

Speaking more specifically of the e/r$_o$u' male, he says (1, p.228):

> This is very common and usually productive ... often he will present a picture of shyness, because while recognizing the need to be active, he is unsure about his ability to be effective and his ability to maintain his facade ... this should not be confused with embarrassment ... his feelings are not very easily hurt by others; he is more disturbed by his own self-criticism ...
>
> Whenever he has learned a skill or becomes qualified in a profession that requires social-interpersonal activity and responsibility, he has also learned the necessity to behave in expected and conventional ways. He works at being what he is supposed to be. The phrase "he has a professional manner" is often applied .. However, he is easily fatigued in such situations ...

J. Social Workers B

On the basis of 11 WAIS records from 10 individuals (one retest is included), this group yields a span index of 0.649 (Table 11) which is not particularly good but is closely comparable with the quality of definitiion achieved for Social Workers A. Again there are two major dimensions of intra-group variability, and these are plotted in Figure 12. The family of personality patterns encompassed by this group is typically female, and normatively more common than any other pattern we have considered in this study. The listing of similar cases from the master file does not turn up a cluster of psychologically parallel comments.

Again it is difficult to select any one PAS formulation to stand for the entire group. Perhaps the most consistent aspect of the patterns is the primitive EFA configuration. At the basic level this becomes either i*fa or efu*, and these correspond to the two extremes of the first intra-group dimension. The contact patterns then become i/r'u' or i'r'a$_o$, respectively. Gittinger offers the following remarks concerning the i/r'u' or i'r'a$_o$, (1, p. 123):

> The i/r'u' recognizes the need to be cautious in social-interpersonal relations and is even cautious in making superficial involvements. Since he is vulnerable to sensual distractions, be becomes impatient and irritable whenever others tempt or distract him ... Most

Table 11

Reference Group Characterization for Social Workers B

Span = .649

	WTS Variables less NL												
	NL	I	C	D	A	S	PA	PC	BD	OA	DS	Q_1	Q_2
Means	1210	81	221	-449	-201	131	-246	-100	-233	-206	-175	118	-109
Covariances													
NL	221	-45	54	-245	-14	-39	129	-38	-119	-257	-50	35	-52
I-NL	-45	118	46	33	46	25	-09	-84	25	-26	11	06	-58
C-NL	54	46	377	-122	-243	108	-30	-180	-167	-62	121	138	36
D-NL	-245	33	-122	749	-27	-124	-81	148	200	574	165	09	13
A-NL	-14	46	-243	-27	579	-152	39	107	75	-89	-257	-132	-139
S-NL	-39	25	108	-124	-152	178	-09	-61	-44	-73	59	28	56
PA-NL	129	09	-30	-81	39	-09	204	-08	-88	-108	-14	67	-25
PC-NL	-38	-84	-180	148	107	-61	-08	207	87	30	-57	-82	-06
BD-NL	-119	25	-167	200	75	-44	-88	87	169	94	-19	-92	-57
OA-NL	-257	-26	-62	574	-89	-73	-108	30	94	790	154	54	200
DS-NL	-50	11	121	165	-257	59	-14	-57	-19	154	247	87	50
Q_1	35	06	138	09	-132	28	67	-82	-92	54	87	124	29
Q_2	-52	-58	36	13	-139	56	-25	-06	-57	200	50	29	190
Eigenvectors													Roots
I	-26	-00	-11	64	-06	-08	-12	10	17	65	15	00	10 1702
II	-03	-00	-46	08	65	-22	02	25	21	-12	-32	-23	-19 1180
III	13	-21	-04	-38	27	-10	20	-09	-33	56	-23	12	41 415
IV	28	22	30	36	31	-28	41	-23	-21	-00	11	31	-33 392
V	-38	39	37	-15	39	17	-41	-39	06	13	-11	-07	-06 383
VI	-25	31	-45	-08	05	50	53	-20	07	01	24	09	06 210
VII	-24	-13	36	24	29	39	11	52	-29	-22	-02	07	27 175
VIII	-02	-21	-05	-24	33	-14	-18	08	-07	01	85	-08	-05 124
IX	07	29	-12	25	03	-29	-06	-25	-16	-33	10	-26	68 88
X	-56	-12	-15	-09	-06	-40	-05	-03	-02	-22	-06	65	07 71
XI	-18	49	26	-31	-15	-37	31	46	17	14	07	-19	05 54
XII	07	-34	31	00	15	-00	26	-19	75	-07	03	05	29 46
XIII	47	38	-12	-06	10	16	-34	28	24	04	06	53	20 44

*In this table all decimal points have been omitted to save space; unless otherwise indicated, all figures are reported to two decimals.

SOCIAL WORKERS B

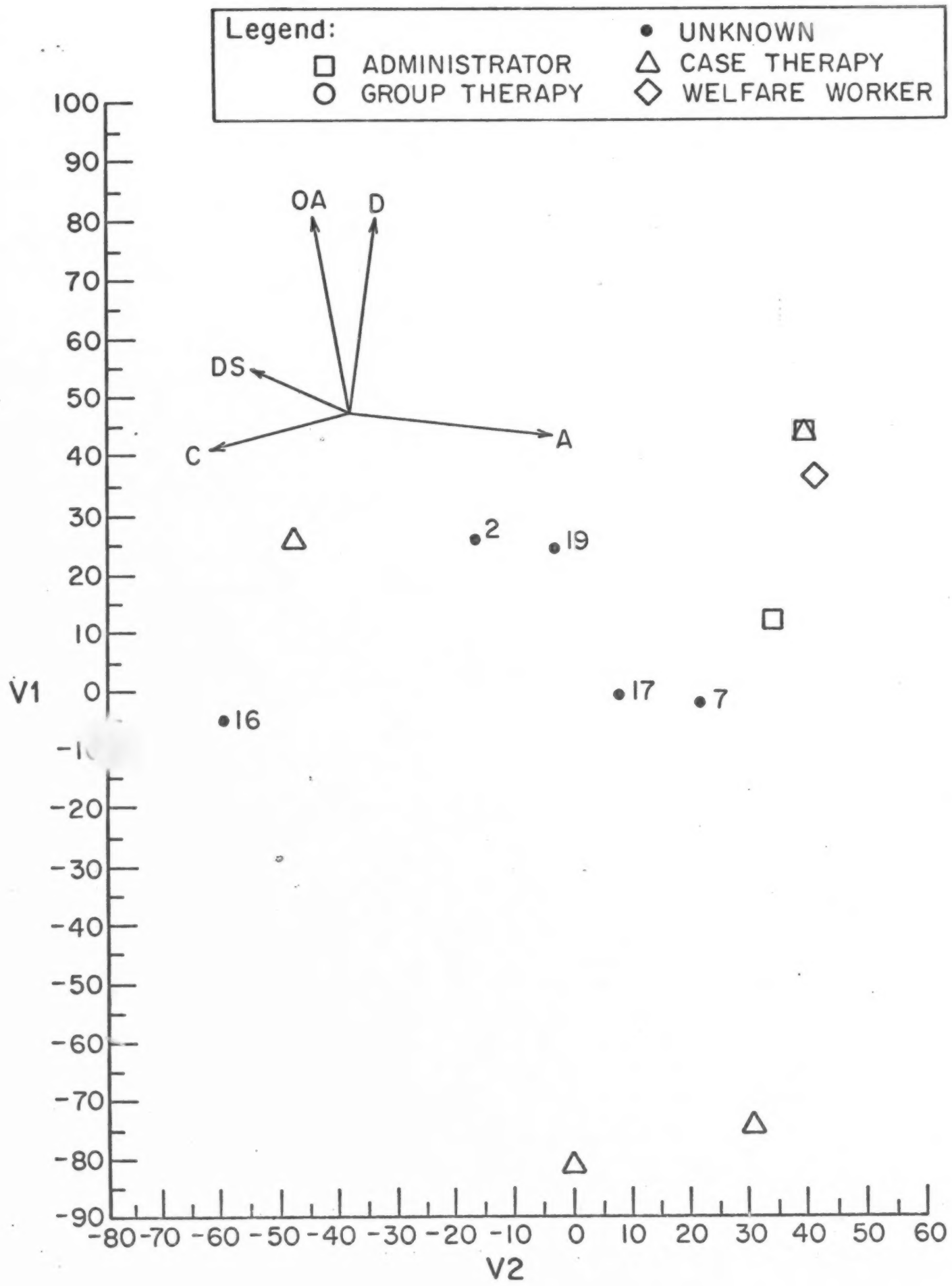

Figure 12

> of the time (he) throws himself into his work and is quite compulsive and ritualistic in performing his activities. He feels most comfortable when working in a disciplined situation where there are well-defined procedures enforced by external authority. However, he ... tends to become cynical and bitter towards authority that is neither as competent nor as understanding as he expects.

Concerning the i'r'a$_o$ he says (1, p. 111):

> This is very common and potentially very efficient ... the best manifestation of the "participant observer" concept ... in effect, this individual is socially active, but cautious and wary ... interested in and able to recognize and describe the feelings, emotions, attitudes, and interests of other people without becoming too involved with them.
>
> There is ordinarily considerable tension in this adjustment, since it is necessary for the individual to remain detached and relatively non-involved in situations that are inherently stimulating and inviting. Nervous fatigue and exhaustion are not uncommon in individuals who are forced to maintain this control over long periods of time.

It seems evident from these descriptions of Social Workers A and Social Workers B that they differ much more in their patterns of motivation (and in their consequent reactions to job stress) than they differ in their actual job role. So far as we can see, both groups are functioning in similar roles, but for opposite reasons. For Social Workers B, the role is a spontaneous expression and the danger is that they will play it too well. For Social Workers A, the role depends on hard-won learning and the danger is that they will not play it well enough. This conception of the difference also accounts for our finding many cases like Social Workers A in the master file, which tends to oversample the academic environment. This may also account for our earlier failure to anticipate the PAS heterogeneity of the overall social worker sample (p. 17 above).

Chapter 5 Conclusions and Recommendations

Conclusions:

In this study, employing the Gittinger Personality Assessment System which interprets the patterning of WAIS subtest scores, we have succeeded in establishing a number of reference groups consisting of individuals whose personality profiles are sufficiently similar to warrant speculation that they may also show similar behavioral styles. The first three of these reference groups comprise almost all of the individuals in those professions which require the most extended and complex academic training. The largest and most stable of these groups we have called Professional Generalists. This group of 129 individuals includes all of the Mathematician-Physicist-Programmer group, the Science Teachers, the Pharmacists, most of the Attorneys and about half of the Physicians. In PAS terms they can be characterized modally as e*f*u at the Basic level. They are non-imitative and likely to have self-generated and self-inspired interests. They have developed mental discipline and have learned to be evaluative and probing. Though rarely imaginative, they may be quite productive.

Within the professional generalist group, however, and within the professions represented therein, we find meaningful variations in personality patterns which, to the extent that we were able to discover them, are associated either with the professional specialties of the individuals or with the kinds of institutional settings in which they work. Specifically we find meaningful differences in the personality patterns of mathematicians, physicists and programmers, with relatively little overlap between the latter two. Similarly we find differences between the hospital pharmacists and the community drug pharmacists.

Stressing now the similarities within the Professional Generalist group, all of whom have made adjustments to highly intellectual professional career demands, we find that the hospital pharmacists, the theoretical mathematicians, most of the teachers of science and some few of the attorneys appear close to each other in personality adjustment terms. Contrasting with these we find similarities between the community drug store pharmacists, the programmers, and a few physicians, attorneys and science teachers. Those who fall between these contrasting extremes within the larger group, are best represented by the physicists, but some physicians, attorneys and teachers are found here as well.

In terms of vocational advice, we think that we could say to a woman university student who shows any of the relatively minor variations within the Professional Generalist pattern we have described, that she might well want to consider a professional career

in any one of the five professions we have included in this reference group. We might be able further to tell her that if she were to choose one of these, she might well expect that she would find more satisfaction in one aspect of that profession than in another, as for example, in hospital pharmacy or mathematics as against community drug pharmacy or programming.

We find satisfaction in the thought that in all likelihood university women who fit the Professional Generalist pattern in PAS terms can choose a career from a fairly broad spectrum of professions and can still find within those professions a place where their talents could fit comfortably and productively. We think that from this exploratory study, limited as it is, we have in some measure improved our ability to offer university women meaningful advice regarding vocational choice.

The second reference group we have established, composed of Attorneys and Physicians, we have called "Procedural Specialists." The personality patterns of this group may be characterized as highly intellectualized. These individuals have mastered complex procedures which they use comfortably, and they may be very productive.

A third group of only four physicians appears to us to be the nucleus of a potentially interesting reference group and we have called them "Intuitive Specialists." As the name implies, these individuals have personality characteristics which enable them to make educated intuitive inferences - they operate "by feel." Since these individuals can respond flexibly, they may well represent the diagnosticians in the medical profession.

It is highly likely that a wider sampling of professional women would yield other individuals who would fit into one or the other of these "specialist" groups.

The remaining two samples in our study - the Realtors and the Social Workers - contributed no members to the first three reference groups and show quite different personality patterns. We found three meaningful reference groups within the group of Realtors and two within the group of Social Workers.

Realtors A, the first of the realtor reference groups, is composed chiefly of saleswomen, and may briefly be characterized as succeeding in their profession primarily because of their personal acceptability (Primitive A). The second realtor reference group, Realtors B, again primarily saleswomen, may achieve success because of conscious application to the job. This group has some personality characteristics in common with the reference group we have called the Procedural Specialists. The third realtor reference group, Realtors C, is essentially a group of practicing brokers. This group is unique in our study of 221 professional women, in that <u>all</u> the

2

individuals who showed a PAS pattern of Basic r* are included in the group, implying the aggressive and competitive qualities consistent with strong involvement in the Real Estate business.

Within each of the two obtained reference groups of social workers, Social Workers A and Social Workers B, we find a tendency for case workers and administrators to appear. The distinction between these two reference groups seems to be more a function of different motivational patterns than of any difference in the way they are expected to function as social workers.

Professor Hinkle's stated principle that "the more complex the training involved, the more homogeneous should be the PAS patterns within the group," appears to explain in part, at least, the results we actually obtained, with the "Professional Generalists" showing the most homogeneity and the Realtors and Social Workers showing considerable heterogeneity.

It would appear that the descriptions written by Gittinger with men in mind are not difficult to apply to women. When looking at members of a reference group, the meaning of the pattern as such seems to override most sex differences.

For a university woman student whose WAIS/PAS pattern fits one of the reference groups we have established, it should be possible to suggest consideration of a career appropriate to the professions represented in that reference group. If, for example, her pattern were found to be similar to that of our Professional Generalists, a fairly wide choice of professions might be suggested, with the further refinement that within the field of her choice she should be advised that in all probability she would be likely to find greater satisfaction in one aspect of that profession rather than another.

Recommendations:

We have apparently sampled heavily from those individuals who fit into the Professional Generalist reference group. Our sampling of individuals who fit into the other reference groups has clearly been less adequate. Accordingly, we suggest that in future efforts to draw samples of professional women for subsequent PAS analyses, every effort should be made to find other "Procedural Specialists" or "Intuitive Specialists" and individuals who fit into the other reference groups we have established.

This study, though exploratory in nature, has nonetheless been sufficiently productive of results potentially of value in vocational counseling to warrant its extension to the study of other professions. In the planning of such a future study, included should be a procedure for discovering for each individual, corollary information about the specific nature of the skills employed or the nature of one's chosen specialization within the profession; thus, the kinds of information we were able to obtain only informally should be

systematically gathered. This would greatly enhance the formation of meaningful reference groups.

Replication of this study in other geographical areas would be of interest and is recommended. That it could not be done in this area is unfortunate but true, for in some of the professions we have studied, it would not be possible to obtain equally large Subject groups; there are still too few women in these professions. Should the vocational advice which can potentially come from this study be given effectively, it is possible that more university women could be directed into these highly regarded professions.

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Appendix 1

Sources for Names of Women in the Professions Studied

Attorneys — 1968 Directory and Annual Report. The Colorado Bar Association.

Physicians — Directory of Registered Physicians, corrected to April 15, 1968. The Colorado State Board of Medical Examiners.

Pharmacists — Roster, Pharmacists, Assistant Pharmacists, and a Directory of Drug Stores, Proprietors, and Managers as of March 1, 1967.

Mathematicians, Physicists, Programmers — Lists supplied by the National Bureau of Standards; the Environmental Science Services Administration; the National Center for Atmospheric Research, all of Boulder, Colorado, and the Faculty Directory, University of Colorado. Boulder, Colorado.

Realtors — Official Membership Roster, July 1967 - July 1968. Denver Board of Realtors.
List of Boulder Women Realtors provided by Miss Marguerite E. Sherman.

Social Workers — Directory of Members, May 1968. Northern Colorado Chapter of National Association of Social Workers.

Science Teachers — Denver Public Schools Directory.
Boulder Public Schools Directory.

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

DEPARTMENT OF PSYCHOLOGY

July 10, 1968

Dear

I am writing to you in the hope that you may be willing to participate in a pilot study being conducted by the University of Colorado Women's Center.

Our study concerns the identification of characteristics of certain groups of professional women, with a view toward more informed guidance of women into professional careers. A maximum of two hours of your time would be required for the administration of a series of ability tests, to be given at a time and place convenient for you. One of our staff members will contact you by phone in the near future to give you further details and, providing you are willing, make specific arrangements for testing.

Your consideration of my request will be greatly appreciated.

Sincerely,

Dorothy R. Martin
Associate Professor

Appendix 2

Letter Sent to Prospective Subjects

Appendix 3

The Testers

Doris Haskins	M.S.	Staff Psychologist, Aurora Mental Health Center
James Hester	M.A.	Staff Psychologist, Arapahoe Mental Health Clinic
Carolyn Jones	M.A.	Doctoral Candidate in Clinical Psychology, University of Colorado
Ruby Koschene	M.A.	Doctoral Candidate in Clinical Psychology, Colorado State University
Eileen Larsen	Ph.D.	Specialty: Clinical Psychology. Arapahoe Mental Health Clinic Staff Psychologist
Richard Loesch	B.S.	Candidate for the Masters degree in Clinical Psychology, University of Colorado
Mary Mandarino	B.A., M.A.,	Psychiatric Nursing
Robert Michener	B.A.	Psychometrist, University of Colorado Counseling Center
Edward Rosenberg	M.A.	Doctoral Candidate in Clinical Psychology, University of Colorado
Jenilu Schoolman	Ph.D.	Specialty in Social-Personality, University of Colorado
Mary Lee Smith	M.S.	Counselor, University of Colorado Denver Center
Barbara Volpe	B.A.	Assistant Psychometrist, University of Colorado

ID No. _____ Subject's Name _____

Birthdate _____ Age _____ Sex M F Marital S M D W

RECORD FORM for extended WAIS (version IV)*

Tested by _____ Date _____ Place _____

Prev. WAIS? Where _____ When _____ Education (yrs) ____ College Major _____

Occupation (1) _____ (2) _____

Father's Occup. _____ Mother's Occup. _____

Nationality _____ Sub-national culture _____ If foreign, Yrs. in U.S. ____

SIBLING RANK	
Sex Circle	Age
M F	____
M F	____
M F	____
M F	____
M F	____
M F	____

RESIDENCE:

Town size	Ages in residence
_____	_____
_____	_____
_____	_____

Counselor _____

Circle other tests taken:

		Experimental	
AGCT	EPPS	Lee/Thorp Occ Inv.	Ed.Int:Inv.
CMM	Guilf-Zimm	Kuder Pers.	EPSAT
Miller Analg.	IPAT 16PF	Kuder Voc.	Bennett Mech.
Otis QukScr.	Minn.Teach.ATT	Thurstone	MacQuarrie Mech.
SCAT	Allport/Vern.Values	Strong Voc. Inv.	

OBSERVATIONS

Appendix 4

*A modification of the record form for the Wechsler Adult Intelligence Scale. Reproduced for research purposes by permission of The Psychological Corporation. Copyright 1947, 1955. All rights reserved.

Revised 10/26/59, 10/26/62, 12/28/66.

ID No. _____ 1. [ ]

1. INFORMATION	+4
5. Rubber	
6. Presidents	
7. Longfellow	
8. Weeks	
9. Panama	
10. Brazil	
11. Height	
12. Italy	
13. Clothes	
14. Washington	
15. Hamlet	
16. Vatican	
17. Paris	
18. Egypt	
19. Yeast	
20. Population	
21. Senators	
22. Genesis	
23. Temperature	
24. Iliad	
25. Blood vessels	
26. Koran	
27. Faust	
28. Ethnology	
29. Apocrypha	
30. Principia	
31. Everest	
32. Australia	
33. Habeas Corpus	
34. Archimedes	

2. [ ]

2. COMPREHENSION	+4
3. Envelope	
4. Bad company	
5. Movies	
6. Taxes	
7. Iron	
8. Child labor	
9. Forest	
10. Deaf	
11. City land	
12. Marriage	
13. Brooks	
14. Swallow	
15. Trade	
16. Hammer	

6. PICTURE ARRANGEMENT

	Order	Time	SCORE
1. Nest 60"	1 2		WXY WXY
2. House 60"	1 2		PAT PAT
3. Hold up 60"			ABCD
4. Louie 60"			ATONIC
5. Enter 60"			OENSP OPENS 20 10
6. Flirt 60"			JANET JNAET AJNET 20 10
7. Fish 120"			EPGHIJ EGPHIJ GPEHIJ GEPHIJ 40 20 10
8. Taxi 120"			AMUELS SAMELU SALEUM SAMUEL SALMUE 40 20 10

6. [ ]

7. PICTURE COMPLETION

	Act. Time	Time (If Correct)	Actual Response
1. Knob		> 20 20 10 5	
2. Tail		> 20 20 10 5	
3. Nose		> 20 20 10 5	
4. Handles		> 20 20 10 5	
5. Diamond		> 20 20 10 5	
6. Water		> 20 20 10 5	
7. Nose piece		> 20 20 10 5	
8. Peg		> 20 20 10 5	
9. Oar lock		> 20 20 10 5	
10. Base thread		> 20 20 10 5	
11. Stars		> 20 20 10 5	
12. Dog tracks		> 20 20 10 5	
13. Florida		> 20 20 10 5	
14. Stacks		> 20 20 10 5	
15. Leg		> 20 20 10 5	
16. Arm image		> 20 20 10 5	
17. Finger		> 20 20 10 5	
18. Shadow		> 20 20 10 5	
19. Stirrup		> 20 20 10 5	
20. Snow		> 20 20 10 5	
21. Eyebrow		> 20 20 10 5	

7. [ ]

3. ☐

3. DIGIT SPAN	SCORE
Digits Forward	Circle
5-8-2	3
6-9-4	3
6-4-3-9	4
7-2-8-6	4
4-2-7-3-1	5
7-5-8-3-6	5
6-1-9-4-7-3	6
3-9-2-4-8-7	6
5-9-1-7-4-2-8	7
4-1-7-9-3-8-6	7
5-8-1-9-2-6-4-7	8
3-8-2-9-5-1-7-4	8
2-7-5-8-6-2-5-8-4	9
7-1-3-9-4-2-5-6-8	9
2-9-7-4-8-0-5-1-3-6	10
5-7-0-2-8-6-9-4-1-3	10
Digits Backward	Circle
2-4	2
5-8	2
6-2-9	3
4-1-5	3
3-2-7-9	4
4-9-6-8	4
1-5-2-8-6	5
6-1-8-4-3	5
5-3-9-4-1-8	6
7-2-4-8-5-6	6
8-1-2-9-3-6-5	7
4-7-3-9-1-2-8	7
9-4-3-7-6-2-5-8	8
7-2-8-1-9-6-5-3	8
6-2-5-4-7-1-9-3-8	9
1-8-2-3-6-5-7-4-9	9

F____ +B____ =____
Highest numbers circled

4. ☐

4. ARITHMETIC			
	R +2	Time	Response
3. $9			
4. 4¢			
5. 1.50			
6. 30			
7. 6			
8. 8			
9. 36¢			
10. 10.50			
11. 1.86			
12. $600			
13. $51			
14. 96			
15. 110			
16. 30			

5. ☐

5. SIMILARITIES	
1. Orange—Banana	
2. Coat—Dress	
3. Axe—Saw	
4. Dog—Lion	
5. North—West	
6. Eye—Ear	
7. Air—Water	
8. Table—Chair	
9. Egg—Seed	
10. Poem—Statue	
11. Wood—Alcohol	
12. Praise—Punishment	
13. Fly—Tree	
14. Liberty—Justice	
15. Tramp—Cripple	
16. House—Ship	

8. BLOCK DESIGN		
	Time	SCORE
1.	1 / 2	60 / 60
2.	1 / 2	60 / 60
3.		60
4.		60
5.		60
6.		60 20 10
7.		120 40 20
8.		120 80 40 20
9.		120 80 40 20
10.		120 80 40 20

8. ☐

9. OBJECT ASSEMBLY			
		Time	SCORE
Manikin	120"		0 1 2 3 4 5 16-20: 6 11-15: 7 1-10: 8
Profile	120"		0 1 2 3 4 5 6 7 8 9 36-45: 11 26-35: 12 1-25: 13
Hand	180"		0 1 2 3 4 5 6 7 41-50: 9 31-40: 10 1-30: 11
Elephant	180"		0 1 2 3 4 5 6 7 8 31-50: 10 21-30: 11 1-20: 12

9. ☐ 10. ☐ 11. ☐ 12. F/B ☐

11. VOCABULARY (WAIS Before ?)

1. Bed		
2. Ship		
3. Penny		
4. Winter		
5. Repair		
6. Breakfast		
7. Fabric		
8. Slice		
9. Assemble		
10. Conceal		
11. Enormous		
12. Hasten		
13. Sentence		
14. Regulate		
15. Commence		
16. Ponder		
17. Cavern		
18. Designate		
19. Domestic		
20. Consume		
21. Terminate		
22. Obstruct		
23. Remorse		
24. Sanctuary		
25. Matchless		
26. Reluctant		
27. Calamity		
28. Fortitude		
29. Tranquil		
30. Edifice		
31. Compassion		
32. Tangible		
33. Perimeter		
34. Audacious		
35. Ominous		
36. Tirade		
37. Encumber		
38. Plagiarize		
39. Impale		
40. Travesty		

10. DIGIT SYMBOL

1	2	3	4	5	6	7	8	9
–	⊥	⊐	L	U	O	^	X	=

SCORE

SAMPLES

2	1	3	7	2	4	8	1	5	4	2	1	3	2	1	4	2	3	5	2	3	1	4	6	3

1	5	4	2	7	6	3	5	7	2	8	5	4	6	3	7	2	8	1	9	5	8	4	7	3

6	2	5	1	9	2	8	3	7	4	6	5	9	4	8	3	7	2	6	1	5	4	6	3	7

9	2	8	1	7	9	4	6	8	5	9	7	1	8	5	2	9	4	3	6	3	7	9	8	6

1	2	3	4	5	6	7	8	9
–	⊥	⊐	L	U	O	^	X	=

Appendix 5

PAS 1 Listing of Basic Data

The following computer-printed pages record all data obtained in the study for each of 221 professional women subjects.

The column headings refer to the data as follows:

GRP IDENT: Code number for professional group identification in four digits.

Next digit refers to previous WAIS experience.

NAT: Nationality (1. American Caucasian, 4. Negro, 9. Hawaiian, 25, German).

Next digit refers to completeness of data.

AGE: (includes sex).

ED: Years of education as reported by Subject.

Next eleven columns: standard abbreviations for WAIS subtests.

Q1: Perspective minus contact (Saunders, 6).

Q2: Scientific minus cultural information (Saunders, 7).

NL29: Normal level computed according to Winne (16)

PRIMITIVE: Formulas according to Winne (16).

BASIC: Formulas according to Winne (16).

IDEAL: Formulas according to Winne (16).

COMMENTS: Group designation, or specialty where known.

GRP	IDENT		NAT	AGE	ED	V	D	A	I	BD	S	C	PA	PC	OA	DS	Q1	Q2	NL29	P
HAP	1001	049		54F	19		17	15	15	14	13	17	10	8	10	10	2	-1	14.9	I
HAP	1002	049		46F	19		11	10	15	8	13	15	7	10	10	10	0	0	11.5	I
HAP	1003	049		47F	16		10	14	12	16	10	16	9	11	12	11	-2	0	11.9	I
HAP	1004	049	1	72F	16		9	14	10	8	11	15	6	9	7	9	-1	-1	10.1	I
HAP	1005	049		32F	17	16	15	14	15	13	16	17	12	13	12	13	-1	-1	14.6	I
HAP	1006	049	1	52F	19	15	11	17	15	13	14	17	7	13	11	14	0	-3	14.1	E
HAP	1007	049		33F	19	16	13	11	16	9	17	16	12	11	10	11	1	0	13.6	I
HAP	1008	049	1	45F	21		11	16	14	12	13	15	7	8	12	12	4	-3	12.9	I
HAP	1009	049	1	36F	19		17	14	13	14	10	16	12	11	13	15	-1	2	13.6	I
HAP	1010	049		37F	20		12	11	10	8	15	12	8	13	11	11	0	-1	11.8	I
HAP	1011	049	1	36F	20		15	10	14	8	14	15	12	13	10	11	1	-1	14.0	I
HAP	1012	049	1	74F	20		14	14	12	6	14	15	5	11	3	9	0	-1	13.5	I
HAP	1013	049	1	50F	20		15	14	17	6	16	17	11	10	11	10	2	-1	15.7	I
HAP	1014	049		40F	19	15	12	15	14	10	14	16	10	13	12	10	0	-2	13.7	I
HAP	1015	049	1	38F	18		7	12	14	10	15	13	12	11	12	9	0	-3	12.9	E
HAP	1016	049	1	45F	20		13	15	15	15	16	17	12	11	12	16	-1	0	14.9	I
HAP	1017	049	1	35F	20		12	16	16	15	17	17	14	13	13	14	2	-1	15.7	E
HAP	1018	049	1	34F	16	14	8	16	16	11	15	14	13	13	12	11	1	-2	14.3	E
HAP	1019	049	1	44F	19	15	11	16	16	16	16	16	12	12	12	11	0	0	15.9	E
HAP	1020	049	1	40F	21	15	13	13	16	15	16	14	12	12	12	12	4	-2	14.2	I
HAP	1021	049	1	36F	19	14	15	13	13	13	16	15	10	13	12	13	-2	-2	13.4	I
HAP	1022	049		48F	20		11	17	17	13	17	18	12	11	11	11	-1	-1	16.4	E
HAP	1023	049		39F	19		8	13	17	11	18	18	10	13	12	11	0	-1	14.3	E
HAP	1024	049	1	64F	17	16	10	9	14	8	13	13	9	11	12	7	1	-2	12.8	E
HAP	1025	049		37F	18	14	9	15	16	15	17	15	11	13	12	12	2	-2	15.3	E
HAP	1026	049	1	27F	19	15	7	11	12	14	16	15	12	13	11	14	0	-1	13.3	E
HAP	1027	049	1	30F	20	15	14	13	17	16	17	15	11	13	14	16	3	-1	15.6	I
HAP	1028	049	1	31F	19		9	11	14	10	16	17	8	11	12	13	0	-2	13.1	E
HAP	1029	049	1	45F	18		13	16	15	13	13	14	7	14	12	12	1	-1	13.8	I
HAP	1030	049		28F	19	15	13	14	15	14	14	16	8	10	13	10	0	0	14.4	I
HAP	2001	049	1	45F	30		14	12	17	11	18	18	8	12	9	10	0	0	14.6	I
HAP	2002	049		35F	22	15	17	14	17	11	16	15	12	14	10	15	1	-1	15.2	I
HAP	2003	049	1	60F	22	14	12	16	16	12	17	15	9	12	11	10	3	-1	14.8	E
HAP	2004	049	1	43F	25	17	12	15	16	15	16	17	8	14	11	11	0	-3	15.4	E
HAP	2005	049	9	45F	20	17	8	10	16	8	17	18	10	13	10	12	-1	-2	13.4	E
HAP	2006	049	1	57F	28		15	11	13	11	10	17	7	12	11	8	3	-4	12.1	I
HAP	2007	049		52F	24	16	13	14	15	14	17	17	12	13	13	9	1	0	14.7	I
HAP	2008	049	1	39F	20		17	13	16	15	16	15	12	14	11	14	1	-1	15.1	I
HAP	2009	049	1	49F	23		13	14	15	14	17	15	12	13	10	17	2	-2	14.3	I
HAP	2010	049	1	46F	33		15	10	14	7	15	18	8	10	8	12	1	1	13.8	I
HAP	2011	049	1	31F	18	12	11	11	13	15	12	11	11	13	13	14	1	0	12.8	I
HAP	2012	049	1	44F	19		9	11	15	13	16	17	12	11	13	15	3	-1	14.3	E
HAP	2013	049	1	47F	20		9	10	14	11	16	18	14	11	12	17	0	-2	13.8	E
HAP	2014	049	1	51F	24	17	15	17	17	11	17	17	14	15	13	13	1	0	16.5	I
HAP	2015	049	1	52F	25	16	13	14	16	7	16	16	12	12	10	7	2	0	14.7	I
HAP	2016	049		39F	20	16	8	14	16	18	16	18	8	13	14	10	-1	-2	15.7	E
HAP	2017	049		43F	23	17	6	16	17	13	16	17	12	13	11	13	2	-1	15.3	E
HAP	2018	049		49F	21		8	13	15	13	16	13	6	12	10	8	1	-2	13.5	E
HAP	2019	049	1	65F	21	14	11	16	15	13	14	13	5	13	12	11	2	-1	13.7	E
HAP	2020	049	1	34F	24		13	12	14	14	13	14	12	13	11	11	-1	0	13.3	I

PRIMITIVE	BASIC	IDEAL	COMMENTS
I+R U+ L+	E*R U	E/R A'	MEMBER LAW FIRM
I F+U+ H	E*F U	E/R'A'	TRIAL ATTORNEY
I R+U H	E*R A*	E/R A/	LABOR ATTORNEY
I F U+ H	E*F A*	E/R'U.	TRUST ATTORNEY
I F U H	E*F U	E/R'A'	ATTORNEY - DA'S OFFICE
E R U+ H	I*F*A*	I/R.U.	ATTORNEY - GP
I F+A L	I F U*	E'R'A.	ATTORNEY - DA'S OFFICE
I R U+ H	E*F*U	E/R.U	ATTORNEY
I+R A H	E*R U*	E/R U/	TAX ATTORNEY
I F+U+ H	E*F A*	I.R'A/	TRIAL ATTORNEY
I F+A L	I F A	E'R'U'	ATTORNEY
I F+U+ L+	E*F U	I.R'A'	ESTATE ATTORNEY
I F+U L+	E*F U	E/R'A'	TRIAL ATTORNEY
I F+U L	E*F A*	E/R'U.	ESTATE ATTORNEY
E+F A L	I*F U*	I/R'U/	ATTORNEY
I R U H	E*F*U	E/R.A'	ATTORNEY
E R A H	I*F*U*	I/R.A.	JUDGE, MEMBER LAW FIRM
E+F A L	I*F U*	I/R'A.	ATTORNEY
E R U L	I*F*U	I/R.A'	ATTORNEY
I R A H	E*F*U*	E/R.A.	ATTORNEY - GP
I+R U H	E*F*A*	E/R.A/	ATTORNEY
E+F U L+	I*F U	I/R'A'	ATTORNEY
E+F U L	I*F U	I/R'A'	ATTORNEY
E F+U L+	E F U	I'R'U	ATTORNEY
E+R U L	I*F*U	I/R.A'	ATTORNEY
E+R A H	E F*A	I'R.U'	MEMBER LAW FIRM
I R U H	I F*U	E'R.U	ESTATE ATTORNEY
E F+U+ H	E F U	I'R'A'	ATTORNEY - GP
I R U+ H	E*F*A*	E/R.U.	ATTORNEY - GP
I R U+ L	E*F*U	E/R.A'	ATTORNEY
I F+U+ L+	I F U	E'R'A'	PSYCHIATRIST
I+F U H	E*F A*	E/R'U.	PEDIATRICIAN
E F U+ L+	I*F U	I/R'A'	OPHTHALMOLOGIST
E R U+ L	I*F*A*	I/R.U.	PSYCHIATRIST
E+F+U H	E F A*	I'R'U.	PEDIATRICIAN
I+R U+ L+	E*R A*	E/R A/	PHYSICIAN - GP
I R U L+	E*F*A*	E/R.A/	PEDIATRICIAN
I+R U H	I F*A*	E'R.U.	ANAESTHESIOLOGIST
I R A H+	E*F*A	E/R.U'	PHYSICIAN - GP
I F+U+ H	I F U	E'R'A'	PHYSICIAN - GP
I R+A H	I F*A	E'F/A	PHYSICIAN - GP
E+R U H	E F*U	I'R.U	PEDIATRICIAN
E+F A H+	E F U*	I'R'A.	PATHOLOGIST
I F+A L	E*F U*	E/R'A.	CHILD PSYCHIATRIST
I F+U L+	E*F U	E/R'A'	PSYCHIATRIST
E+R+U+ L+	I*F*U	I/R.U	PHYSICIAN - GP
E+F U L	I*F U	I/R'A'	PEDIATRICIAN
E+R U+ L+	I*F*U	I/R.A'	ANAESTHESIOLOGIST
E R U+ L	I*F*A*	I/R.U.	INTERNAL MEDICINE
I R A L	E*F*A	E/R.U'	PEDIATRICIAN

UNIVERSITY OF COLORADO GRADUATE SCHOOL COMPUTING CENTER

GRP	IDENT	NAT	AGE	ED	V	D	A	I	BD	S	C	PA	PC	OA	DS	Q1	Q2	NL29	PRI
HAP	2021 049		53F	20	16	13	12	17	13	16	16	13	12	12	13	1	0	14.1	I R
HAP	2022 049	1	54F	25	17	10	17	16	16	17	13	7	11	13	13	3	-3	15.4	E+R
HAP	2023 049	1	50F	21	15	9	13	15	11	17	13	8	11	12	10	4	1	13.3	E F
HAP	2024 049	1	43F	23		5	10	15	10	17	13	9	11	13	11	4	-2	12.9	E+F
HAP	2025 049	1	37F	24		15	15	15	13	16	14	11	11	12	13	0	0	14.9	I F
HAP	2026 049	1	43F	20		16	14	16	14	17	15	12	11	13	12	1	-2	15.6	I R
HAP	2027 049		38F	20		15	8	15	12	14	17	12	10	11	14	4	-1	14.1	I F
HAP	2028 049		43F	23	15	9	15	15	16	13	17	8	13	11	8	1	-4	14.6	E+R
HAP	2029 049		30F	24	16	14	10	16	14	17	17	12	13	12	13	3	-2	14.4	I R
HAP	2030 049		29F	21	16	13	16	16	12	16	12	11	12	12	13	1	1	13.7	I F
HAP	3001 049	1	38F	16		7	12	14	11	15	15	9	14	11	11	0	-2	13.8	E+F
HAP	3002 049	1	25F	16		15	14	16	11	14	16	12	11	12	12	2	0	14.2	I F
HAP	3003 049	1	37F	17	14	13	13	14	9	16	15	9	10	9	13	0	0	13.5	I F
HAP	3004 049	1	50F	16		8	13	15	10	15	14	12	12	6	9	0	-3	13.7	E+F
HAP	3005 049	1	34F	16		11	15	13	14	15	16	15	13	9	12	0	0	14.6	E R
HAP	3006 049	1	50F	16		8	10	11	6	15	15	7	11	9	12	2	-2	11.0	E F
HAP	3007 049		30F	16	13	7	11	15	17	14	13	8	12	13	13	1	1	13.5	E+R
HAP	3008 049		44F	16	14	11	11	13	10	15	15	11	13	12	12	0	-2	12.9	I F
HAP	3009 049		31F	16	10	12	14	14	16	14	16	7	11	13	12	-2	0	14.1	I R
HAP	3010 049		29F	16	14	19	16	14	14	16	17	13	14	12	14	1	-2	15.1	I+R
HAP	3011 049		40F	16	13	14	16	15	14	17	15	12	13	13	15	-1	2	15.1	I R
HAP	3012 049		61F	17		6	9	12	8	10	14	4	6	6	10	-1	0	9.8	E+F
HAP	3013 049		42F	17		10	10	14	8	14	11	8	8	7	13	3	1	10.9	I
HAP	3014 049		30F	17		13	15	15	10	14	15	14	12	9	13	-1	1	14.0	I F
HAP	3015 049	1	50F	16		9	16	15	10	14	15	10	13	9	11	0	-1	14.2	E+F
HAP	3016 049	1	28F	16	12	8	17	15	13	16	10	10	12	9	13	0	-1	13.6	E+R
HAP	3017 049	1	29F	17		12	10	13	16	16	15	10	13	12	15	0	-2	14.1	I R
HAP	3018 049	1	43F	16		12	15	16	15	14	16	14	13	12	13	2	0	14.9	E R
HAP	3019 049	1	46F	16		15	13	11	10	15	13	7	11	9	10	1	0	12.5	I+F
HAP	3020 049	1	57F	17		15	14	15	10	17	18	8	9	9	9	1	2	15.1	I F
HAP	3021 049	1	42F	13		14	15	12	10	14	16	10	11	12	11	3	-1	13.4	I F
HAP	3022 049	1	35F	17	16	14	14	17	15	15	14	11	13	14	12	2	0	14.5	I R
HAP	3023 049		49F	14	13	15	15	12	16	13	14	10	12	11	14	1	-3	13.8	I+R
HAP	3024 049		57F			9	14	11	8	11	13	8	9	7	10	0	-2	10.5	I F
HAP	3025 049	1	33F	16	13	12	14	15	14	13	15	11	11	11	12	4	-1	13.9	I R
HAP	3026 049	1	27F	19	13	12	11	13	11	15	14	11	9	11	12	-1	2	12.2	I R
HAP	3027 049	1	36F	16	14	11	12	11	15	14	13	11	13	13	15	0	3	12.7	I R
HAP	3028 049	1	41F	16	10	8	10	11	9	14	9	6	8	11	9	-1	-1	10.6	E F
HAP	3029 049		39F	14	15	14	17	15	16	18	17	15	14	14	14	1	-3	15.8	I R
HAP	3030 049	1	35F	16		10	8	14	8	14	15	8	12	10	12	0	-2	12.6	E F
HAP	4001 049	1	F	17	17	15	16	17	13	16	15	6	9	10	12	3	-1	15.9	I F
HAP	4002 049	1	39F	20	17	11	17	16	15	18	17	11	13	12	14	1	0	16.3	E+R
HAP	4003 049		50F	16	16	15	11	15	12	14	16	9	11	13	12	0	-4	13.6	I F
HAP	4004 049	1	36F	16	16	15	14	13	8	16	17	8	13	11	13	1	0	14.1	I F
HAP	4005 049	1	48F	33		12	15	16	16	17	17	13	15	12	14	0	-1	15.7	E R
HAP	4006 049	1	36F	18	17	8	15	16	17	16	14	9	11	13	14	1	-1	14.9	E+R
HAP	4007 049	1	24F	16	14	13	14	14	16	16	12	10	13	12	15	0	-1	13.9	I R
HAP	4008 049	1	36F	18	8	9	8	11	10	8	6	12	13	11	13	0	0	10.4	I R
HAP	4009 049	1	34F	16	12	8	17	14	13	14	13	12	13	11	13	3	-3	13.1	E+R
HAP	4010 049	1	32F	16		10	15	16	12	17	16	12	13	12	11	2	0	15.3	E+F

PRIMITIVE		BASIC	IDEAL	COMMENTS
I R A	H	I F*U*	E'R.A.	PSYCHIATRIST
E+R U+	H	I*F*U	I/F/A'	RADIOLOGIST
E F U+	L	I*F U	I/R'A'	PHYSICIAN - GP
E+F U	H	E F U	I'R'U	NEUROLOGIST
I F U	H	E*F U	E/R'A'	PHYSICIAN - GP
I R U	L	E*F*U	E/R.A'	ANAESTHESIOLOGIST
I F A	H	I F U*	E'R'A.	ANAESTHESIOLOGIST
E+R+U+	L+	I*R U	I/R A'	PHYSICIAN - GP
I R A	H	I F*A	E'R.U'	PHYSICIAN - GP
I F U	H	E*F U	E/F A'	PEDIATRICIAN
E+F U+	H	E F A*	I'R'U.	HOSPITAL PHARMACIST
I F A	H	E*F U*	E/R'A.	HOSPITAL PHARMACIST
I F+U	H	E*F U	E/R'A'	HOSPITAL PHARMACIST
E+F+A	L+	I*F U*	I/R'A.	HOSPITAL PHARMACIST
E R A	H	I*F*U*	E.R.A.	PHARMACIST
E F+U+	H	I*F A*	I/R'U.	DRUGSTORE PHARMACIST
E+R+U+	H	E F*U	I'R.U	HOSPITAL PHARMACIST
I F A	H	I F A	E'R'A	HOSPITAL PHARMACIST
I R U+	H	E*F*U	E/R.U	PHARMACIST
I+R A	H	E*F*A	E/R.U'	DRUGSTORE PHARMACIST
I R U	H	E*F*U	E/R.A'	DRUGSTORE PHARMACIST
E+F U+	H	I*F U	I/R'A'	DRUGSTORE PHARMACIST
I F U	H+	E*F U	E/R'A'	DRUGSTORE PHARMACIST
I F+A	H	E*F U*	E/R'A.	HOSPITAL PHARMACIST
E+F+U	L	I*F U	I/R'A'	HOSPITAL PHARMACIST
E+R U	H	I*F*U	I/F/A'	HOSPITAL PHARMACIST
I R U	H	I F*U	E'R.A'	DRUGSTORE PHARMACIST
E R A	H	I*F*U*	I/R.A.	HOSPITAL PHARMACIST
I+F U+	L	E*F A*	I.R'U.	DRUGSTORE PHARMACIST
I F+U+	L+	E*F U	E/R'A'	HOSPITAL PHARMACIST
I F+U	H	E*F U	E/R'A'	DRUGSTORE PHARMACIST
I R U	L	E*F*A*	E/R.A/	HOSPITAL PHARMACIST
I+R+U	H	E*F*U	E/R.A'	DRUGSTORE PHARMACIST
I F U	H	E*F U	E/R'A'	DRUGSTORE PHARMACIST
I R U	H	E*F*U	E/R.A'	DRUGSTORE PHARMACIST
I R A	H	E*F*U*	E/R.A.	HOSPITAL PHARMACIST
I R+A	H+	E*F*A	E/R.A	HOSPITAL PHARMACIST
E F U+	H	I*F U	I/F U	HOSPITAL PHARMACIST
I R A	H	E*F*U*	E/R.A.	DRUGSTORE PHARMACIST
E F+U+	H	E F A*	I'R'U.	HOSPITAL PHARMACIST
I F U+	L	E*F U	E/R'A'	MATHEMATICIAN
E+R U+	H	I*F*U	I/R.A'	MATHEMATICIAN
I F U+	H	I F U	E'R'U	MATHEMATICIAN
I F+U+	H	E*F U	E/R'A'	PROGRAMMER
E R A	H	I*F*A	I/R.U'	MATHEMATICIAN
E+R+U+	H	I*F*U	I/R.A'	PHYSICIST
I R+U	H	E*F*A*	E/F/U.	PROGRAMMER
I R A+	H+	I R A	E'F'A	PROGRAMMER
E+R A	H	I*F*A	I/R.U'	MATHEMATICIAN
E+F U	L	I*F U	I/R'A'	PROGRAMMER

UNIVERSITY OF COLORADO GRADUATE SCHOOL COMPUTING CENTER

GRP	IDENT	NAT	AGE	ED	V	D	A	I	BD	S	C	PA	PC	OA	DS	Q1	Q2	NL29	PR
HAP	4011	049 1	25F	19		15	12	16	16	13	13	8	13	12	15	0	-2	14.0	I
HAP	4012	049 1	28F	16		18	16	15	17	16	15	13	13	13	18	1	-2	15.7	I+
HAP	4013	049 1	44F	16		14	15	13	15	15	15	12	11	12	12	2	-2	14.5	I
HAP	4014	049 1	24F	16		11	14	14	14	16	15	12	11	12	15	3	-2	14.2	E
HAP	4015	049 1	41F	12		11	15	12	9	14	17	8	13	11	13	1	-1	13.0	I
HAP	4016	049 1	40F	16		10	16	14	15	13	13	6	13	9	11	2	1	12.9	E
HAP	4017	049 4	38F	19		11	13	10	7	12	12	8	7	9	9	3	3	10.8	I
HAP	4018	049 1	31F	17		9	14	14	13	12	14	8	11	13	16	2	1	13.0	E
HAP	4019	049 1	53F	18	16	11	13	16	12	16	13	10	13	10	15	1	-2	13.6	E
HAP	4020	049 1	46F	18	16	11	12	16	14	16	13	11	11	11	13	-2	-2	13.6	E
HAP	4021	049 1	57F	22	15	11	12	15	8	14	15	4	6	6	11	1	-1	12.4	I
HAP	4022	049 1	34F	17	12	15	14	13	15	13	11	12	11	10	15	1	0	13.4	I
HAP	4023	049 1	50F	16	15	14	14	15	11	14	13	12	12	10	10	1	-3	13.6	I
HAP	4024	049 1	30F	16	12	9	13	13	13	16	13	4	11	12	12	0	0	12.9	E
HAP	4025	049	35F	16	15	14	15	15	15	14	16	16	13	13	14	1	-1	14.7	I
HAP	4026	049 1	27F	16	12	13	14	15	14	16	16	11	13	13	13	0	1	14.1	I
HAP	4027	049 1	22F	16	15	13	12	13	12	15	13	10	11	13	14	2	0	13.1	I
HAP	4028	049 1	F	22	16	14	16	15	15	16	14	12	9	12	10	1	-2	15.2	I
HAP	4029	049 1	F	16	12	6	13	12	11	12	14	12	9	11	13	1	0	11.9	E+
HAP	4030	049 1	62F	16	15	7	15	17	10	14	13	10	11	7	10	-1	-1	13.2	E+
HAP	4031	049 1	F	16	14	11	15	15	16	16	13	8	11	11	13	0	1	14.4	E
HAP	4032	049 1	F	19	14	15	14	12	11	16	13	12	10	6	15	2	-3	13.6	I
HAP	4033	049	26F	16	16	14	17	16	12	14	15	12	13	12	17	2	0	14.7	I
HAP	4034	049	25F	18		12	9	15	15	14	15	12	12	12	17	0	-4	14.4	I
HAP	4035	049	44F	17		5	15	15	14	15	13	9	12	12	13	1	-2	14.2	E+
HAP	4036	049	31F	17		15	11	16	14	14	13	12	11	11	14	2	-2	14.1	I
HAP	4037	049	32F	16		10	15	14	15	14	17	5	12	12	12	0	2	14.3	E
HAP	4038	049 1	41F	17	16	13	13	15	12	15	16	9	11	11	12	1	1	13.4	I
HAP	4039	049	28F	16		14	14	14	17	15	17	12	13	13	15	-2	-1	14.4	I
HAP	5001	049 1	44F	12		8	11	10	8	12	12	5	7	10	10	0	1	10.3	E
HAP	5002	049	56F	14		12	10	10	7	6	12	6	9	11	9	2	0	9.9	I+
HAP	5003	049 1	70F	14		9	13	12	8	6	11	4	7	6	7	0	0	9.1	I
HAP	5004	049 1	42F	12		9	11	10	11	9	13	12	12	9	11	2	-2	10.7	I
HAP	5005	049 25	66F	14		5	13	11	8	12	14	5	6	5	7	1	-4	11.0	E+
HAP	5006	049	58F	16	16	13	13	16	14	14	16	12	13	11	11	1	-1	13.7	I
HAP	5007	049 1	41F	16		13	11	9	9	6	9	8	13	12	9	0	2	10.2	I+
HAP	5008	049 1	71F	18		9	16	14	8	12	15	4	9	6	6	1	-3	12.4	E
HAP	5009	049 1	56F	14		13	11	14	9	9	13	4	9	13	14	2	-4	12.2	I
HAP	5010	049	53F	17		10	9	15	9	16	17	7	13	12	11	-1	-2	13.1	E
HAP	5011	049	42F	12		11	11	12	11	14	13	12	11	12	11	2	-4	12.4	I
HAP	5012	049	57F	18	13	12	15	15	9	12	17	10	9	9	13	4	1	12.9	I
HAP	5013	049	36F	14	11	11	12	10	11	14	15	16	13	11	12	0	-1	12.4	I
HAP	5014	049	54F	13	13	8	8	11	8	10	14	12	12	9	11	1	-2	11.1	E
HAP	5015	049 9	24F	16	13	9	13	13	11	9	11	8	12	13	12	1	3	11.6	E
HAP	5016	049 1	42F	14	14	10	12	14	13	14	12	12	12	11	14	1	-3	12.9	E
HAP	5017	049	48F	14	15	11	16	14	14	13	15	9	11	10	7	1	-3	13.8	E
HAP	5018	049 1	43F	13		11	14	12	10	12	17	10	9	10	11	-1	-2	11.9	I
HAP	5019	049 1	44F	12		10	8	9	12	13	14	7	9	10	14	1	1	11.1	I
HAP	5020	049 1	49F	13		6	17	12	13	16	17	8	11	7	10	0	0	13.0	E+
HAP	5021	049 1	59F	16		10	11	13	10	13	18	13	12	12	8	1	-2	12.9	E

HAP

PRIMITIVE	BASIC	IDEAL	COMMENTS
I R+U+ H	I F*A*	E'R.U.	PROGRAMMER
I+R+A H+	E*F*U*	E/R.A.	PROGRAMMER
I R A H	E*F*U*	E/R.A.	PHYSICIST
E R A H	I*F*U*	I/R.A.	PROGRAMMER
I F+U+ H	E*F A*	E/R'U.	PROGRAMMER
E R+U+ H	I*F*A*	I/R.U.	MATHEMATICIAN
I F+U H	E*F U	E/R'A'	PROGRAMMER
E R U+ H+	I*F*U	I/R.U	PROGRAMMER
E F U H+	I*F A*	I/R'U.	PHYSICIST
E R U H	I*F*U	I/R.A'	PHYSICIST
I F+U+ H	E*F U	E/R'A'	MATHEMATICIAN
I R+A H	E*F*U*	E/F/A.	MATHEMATICIAN
I F A L	E*F U*	E/R'A.	MATHEMATICIAN
E R U+ H	I*F*U	I/R.U	PROGRAMMER
I R A H	E*F*U*	E/R.A.	MATHEMATICIAN
I R U H	E*F*A*	E/R.A/	PHYSICIST
I R U H	E*F*U	E/R.U	PROGRAMMER
I R U L+	E*F*U	E/R.A'	MATHEMATICIAN
E+R A H	I*F*U*	I/R.U/	MATHEMATICIAN
E+F U L	I*F U	I/R'A'	MATHEMATICIAN
E R U+ H	I*F*U	I/R.A'	MATHEMATICIAN
I F A H	E*F U*	E/R'A.	MATHEMATICIAN
I F A H+	E*F A	E/R'U'	PROGRAMMER
I R U H+	I F*U	E'R.A'	PROGRAMMER
E+R U+ H	I*F*U	I/F/A'	PHYSICIST
I R A H	I F*U*	E'R.A.	MATHEMATICIAN
E R U+ H	I*F*U	I/R.A'	PROGRAMMER
I R U H	E*F*U	E/R.A'	PROGRAMMER
I R+U H	E*F*U	E/R.U	MATHEMATICIAN
E F U+ H	I*F U	I/R'U	REAL ESTATE SALES
I+F+U+ H	E*R*U	E/R/U	REAL ESTATE BROKER
I R U+ L	E*R U	E/R A'	REAL ESTATE BROKER
I R A H	E*R A	E/R U'	REAL ESTATE SALES
E+F U+ L+	I*F U	I/R'A'	REAL ESTATE BROKER
I R A H	E*F*A	E/R.U'	REAL ESTATE SALES
I+F A H	E*R*A	I.R/A	REAL ESTATE BROKER
E F+U+ L+	I*F U	I/R'A'	REAL ESTATE BROKER
I F+U+ H+	E*R*U	E/R/U	REAL ESTATE SALES
E F+U+ H	E F A*	I'R'U.	REAL ESTATE SALES
I R A H	E*F*U*	E/R.U/	REAL ESTATE SALES
I F+U H	E*F U	E/R'A'	REAL ESTATE BROKER
I F A+ H	E*F A	I.R'U'	REAL ESTATE BROKER
E F+A+ H	E F A	I'R'U'	REAL ESTATE SALES
E R U+ H	I*R A*	I/R A/	REAL ESTATE BROKER
E R A H	I*F*A	I/R.U'	REAL ESTATE SALES
E R U+ L+	I*F*U	I/R.A'	REAL ESTATE SALES
I F A H	E*F U*	E/R'A.	REAL ESTATE SALES
I R U+ H+	I F*U	I R.U	REAL ESTATE SALES
E+R U+ L	I*F*U	I/R.A'	REAL ESTATE SALES
E F+A L+	E F A	I'R'A	REAL ESTATE BROKER

UNIVERSITY OF COLORADO GRADUATE SCHOOL COMPUTING CENTER

GRP	IDENT	NAT	AGE	ED	V	D	A	I	BD	S	C	PA	PC	OA	DS	Q1	Q2	NL29	PR
HAP	5022	049	1 57F	12		13	16	12	10	15	14	9	9	10	11	-2	-2	13.0	I
HAP	5023	049	1 41F	12	9	11	8	9	13	12	14	4	7	12	14	1	1	11.4	I
HAP	5024	049	1 65F	12	13	10	14	12	8	13	15	8	10	9	7	2	0	12.0	I
HAP	5025	049	1 44F	14	13	10	15	12	14	12	12	10	13	11	9	1	2	12.1	I
HAP	5026	049	1 50F	12		9	9	10	10	15	13	10	11	12	11	3	-2	11.2	E
HAP	5027	049	1 42F	12		13	14	11	13	14	13	11	12	11	9	0	-1	13.2	I
HAP	5028	049	59F	12		11	10	14	6	10	16	4	7	4	6	1	-3	11.0	I
HAP	5029	049	1 41F	12	15	10	9	14	7	13	14	6	7	12	10	2	0	11.6	I
HAP	5030	049	25F	16	15	15	13	16	14	17	17	11	13	13	15	1	-1	14.8	I
HAP	6001	049	58F	18	15	9	10	16	11	15	15	8	11	12	8	0	0	13.0	E
HAP	6002	049	1 62F	18		6	8	11	10	12	14	5	9	12	10	0	0	11.1	E+
HAP	6003	049	1 53F	19		12	17	17	14	16	17	10	12	10	9	0	0	16.5	E
HAP	6004	049	1 56F	18		15	15	14	12	17	18	11	13	13	11	2	1	14.8	I
HAP	6005	049	33F	18	15	15	14	17	16	16	17	11	11	11	12	2	-1	15.6	I
HAP	6006	049	1 56F	18	13	8	8	12	8	12	15	4	7	5	9	0	-2	9.6	I
HAP	6007	049	1 37F	18	14	8	10	14	10	14	16	13	11	11	14	3	-2	13.2	E+
HAP	6008	049	48F	19	14	9	7	12	8	13	17	9	11	12	11	3	1	12.0	E
HAP	6009	049	1 29F	18	15	15	12	14	13	15	13	7	10	11	14	3	-6	13.4	I
HAP	6010	049	1 48F	15	17	11	15	16	10	14	16	9	11	13	11	2	-1	14.3	E
HAP	6011	049	1 52F	14	13	13	9	10	7	15	10	12	10	9	8	2	-2	10.5	I+
HAP	6012	049	1 64F	18		12	10	14	7	15	15	8	11	7	6	-1	-2	12.6	I
HAP	6013	049	1 25F	18	14	5	10	15	8	10	8	8	13	7	10	2	-2	9.9	E+
HAP	6014	049	1 48F	18	15	10	13	12	10	12	12	10	13	12	10	0	0	11.9	I
HAP	6015	049	1 24F	18	17	15	14	16	14	17	17	11	14	9	14	0	0	15.0	I
HAP	6016	049	1 52F	18	16	8	6	13	10	17	17	12	12	10	14	2	0	13.0	E+
HAP	6017	049	1 55F	19		10	13	15	10	14	17	12	11	12	10	2	-3	13.2	E
HAP	6018	049	30F	18	16	12	10	14	16	17	17	12	11	12	11	2	-5	14.3	I
HAP	6019	049	1 59F	16	13	5	8	11	7	12	12	4	7	7	8	1	-1	8.6	E+
HAP	6020	049	1 57F	18	12	6	11	11	10	13	11	11	12	12	7	1	0	11.5	E+
HAP	6021	049	1 39F	19		8	7	11	5	12	16	8	4	6	9	0	-7	9.5	I
HAP	6022	049	54F	19		15	15	15	15	17	17	10	11	12	13	1	1	15.4	I
HAP	6023	049	38F	16		13	13	16	9	17	17	8	11	11	13	1	-3	13.9	I
HAP	6024	049	26F	18		14	12	15	16	15	14	12	10	11	15	-2	0	14.3	I
HAP	6025	049	4 45F	19	14	20	12	13	14	14	13	11	13	11	12	0	0	13.2	I+
HAP	6026	039	4 36F		17	4*	13	16	10*	16	17	14	11	8	11	1	-1	14.6	E+
HAP	6026	149	4 39F	20		5	13	14	11	15	16	12	15	5	10	0	-3	13.8	E+
HAP	6027	049	40F	18	14	13	13	15	8	13	14	8	11	11	12	0	2	13.0	I
HAP	6028	049	37F	18	15	11	11	16	11	16	16	10	11	7	11	0	-2	12.4	I
HAP	6029	049	4 33F	18	13	5	6	14	8	16	13	10	6	12	13	1	-2	12.9	E+
HAP	6030	049	1 29F	18	13	11	9	13	12	11	10	9	11	10	10	0	-3	11.1	I
HAP	6031	049	1 27F	18		15	13	14	14	16	17	9	9	12	13	0	-5	14.5	I
HAP	6032	049	1 37F			12	13	15	10	12	16	5	12	9	11	3	-3	12.4	I
HAP	7001	049	1 28F	17		8	15	13	13	16	14	8	11	11	11	-1	-1	13.5	E+
HAP	7002	049	39F	20		5	14	16	17	17	16	14	15	14	15	-1	-2	15.9	E+
HAP	7003	049	1 46F	17		12	16	16	13	17	17	14	15	11	13	1	-1	16.0	E
HAP	7004	049	1 32F	17		11	15	15	14	17	16	12	14	13	12	1	1	15.2	E
HAP	7005	049	21F	16	16	15	16	15	16	14	17	13	13	12	12	0	-4	15.0	I
HAP	7006	049	1 26F	18		11	13	16	17	17	18	11	15	14	15	0	-2	15.7	E
HAP	7007	049	1 55F	16		8	10	14	14	16	17	8	13	11	11	1	0	14.1	E+
HAP	7008	049	1 48F	18		11	13	14	14	14	14	10	13	10	11	2	-1	13.9	E

PRIMITIVE		BASIC	IDEAL	COMMENTS
I F U	H	E*F U	E/R'A'	REAL ESTATE SALES
I R+U+	H+	I F*U	I R.U	REAL ESTATE SALES
I F+U+	L+	E*F U	E/R'A'	REAL ESTATE BROKER
I R+A	L	E*F*A	E/R.A	REAL ESTATE BROKER
E F A	H	E F A	E R'A	REAL ESTATE SALES
I R U	L	E*F*A*	I.R.U.	REAL ESTATE SALES
I F+U+	L+	E*F U	E/R'A'	REAL ESTATE BROKER
I F+U+	H	I F U	E'R'U	REAL ESTATE BROKER
I R U	H	I F*U	E'R.A'	REAL ESTATE SALES
E F U+	L+	E F U	I'R'U	SOCIAL WORKER
E+F U+	H	E F U	I'R'U	SOCIAL WORKER
E F U+	L+	I*F U	I/R'A'	SOCIAL WORKER
I F U	L	E*F A*	E/R'U.	SOCIAL WORK ADMIN.
I R U	L	E*F*U	E/R.A'	SOCIAL WORKER
I F U+	H	I F U	E'R'A'	CASE THERAPIST
E+F+A	H	E F U*	I'R'A.	SOCIAL WORKER
E F+U	H	E F U	I'R'U	CASE THERAPIST
I R U+	H	E*F*U	E/R.A'	SOCIAL WORK ADMIN.
E F+U+	L	I*F U	I/R'U	SOCIAL WORKER
I+F+A	L	E*F A	E/R'U'	SOCIAL WORKER
I F+U+	L+	I F U	E'R'A'	SOCIAL WORKER
E+F U	H	I*F A*	I/F U.	SOCIAL WORKER
I F A	H	E*F A	E/R'A	WELFARE WORKER
I R U	H	E*F*A*	E/R.U.	CASE THERAPIST
E+F+A	H	E F A	I'R'U'	SOCIAL WORKER
E F A	L	I*F U*	I/R'A.	SOCIAL WORKER
I R A	L	I F*U*	E'R.A.	SOCIAL WORKER
E+F U+	H	E F U	I'R'A'	SOCIAL WORKER
I R A	L	I F*U*	E'R.A.	SOCIAL WORKER
E+F U+	H	E F U	I'R'A'	SOCIAL WORKER
E+F A	L+	I*F A	I/R'A	SOCIAL WORK ADMIN.
I F+A	H	I F U*	E'R'A.	SOCIAL WORKER
I R U+	L	E*F*U	E/R.A'	SOCIAL WORKER
I F+U+	H	E*F U	E/R'A'	GROUP THERAPIST
I R A	H	I F*U*	E'R.A.	WELFARE WORKER
I+R U	H	E*F*A*	E/R.U.	SOCIAL WORKER
E+F+A	L	I*F U*	I/R'A.	CASE THERAPIST
E+F A	L	I*F A	I/R'U'	CASE THERAPIST
I F+U+	H	E*F U	E/R'A'	SOCIAL WORKER
I F U	H	E*F U	E/R'A'	CASE THERAPIST
E+F+U	H	E F U	I'R'U	SOCIAL WORKER
I R A	H	I F*A	E'F/U'	CASE THER. - ADMIN.
I R U+	H	E*F*U	E/R.A'	SOCIAL WORKER
I F U+	H	E*F A*	E/R'U.	SOCIAL WORKER
E+R U+	L	I*F*U	I/R.A'	HS SCIENCE TCHR
E+R A	H	E F*A	I'R.U'	HS SCIENCE TCHR
E F A	L	I*F A	I/R'U'	HS SCIENCE TCHR
E R U	L	I*F*A*	I/R.U.	HS SCIENCE TCHR
I R A	H	E*F*U*	E/R.A.	HS SCIENCE TCHR
E R+U	H	E F*A*	I'R.A/	HS SCIENCE TCHR
E+R U+	L	E F*U	I'R.A'	HS SCIENCE TCHR
E R U	L	I*F*A*	I/R.U.	HS SCIENCE TCHR

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GRP	IDENT	NAT	AGE	ED	V	D	A	I	BD	S	C	PA	PC	OA	DS	Q1	Q2	NL29	PRI
HAP	7009 049	1	31F	19		15	13	15	11	17	15	12	11	12	10	2	-1	14.7	I F
HAP	7010 049	1	26F	16		8	16	14	13	17	13	12	14	8	12	2	-1	14.0	E+R
HAP	7011 049	1	38F	19		13	8	15	12	17	14	9	12	11	14	-1	-1	13.9	I F
HAP	7012 049	1	30F	17		11	11	14	13	15	17	14	11	13	12	0	0	13.6	E R
HAP	7013 049	1	41F	17	12	10	12	12	11	16	17	8	12	13	16	2	1	13.0	E F
HAP	7014 049	1	28F	18		13	14	14	16	15	13	7	12	11	12	1	-2	14.0	I R
HAP	7015 049	4	35F	18		13	15	14	12	16	17	13	13	12	12	0	-2	14.1	I F
HAP	7016 049	1	26F	16		10	11	15	13	14	15	11	11	12	11	-2	-2	13.1	E R
HAP	7017 049		26F	16	12	15	13	12	11	14	14	11	13	11	13	1	0	13.0	I+F
HAP	7018 049		23F	16	15	9	13	15	16	14	17	8	12	9	13	0	-1	14.1	E+R
HAP	7019 049	4	27F	17		9	11	14	10	10	11	8	6	11	12	2	2	10.9	I F
HAP	7020 049		30F	18		7	10	16	16	15	17	12	13	12	16	2	0	15.1	E+R
HAP	7021 049		44F	16		7	14	15	12	14	13	9	13	9	13	0	-1	13.4	E+R
HAP	7022 049		23F	15		11	16	14	16	14	17	16	11	9	13	4	0	15.1	E R
HAP	7023 049	1	24F	16	15	13	12	14	14	12	15	12	12	8	14	-1	-1	13.0	I R
HAP	7024 049		46F	16		11	9	14	9	16	15	8	9	10	12	-3	0	12.2	I F
HAP	7025 049		27F	17		15	14	15	11	15	15	10	11	8	17	1	-2	14.2	I F
HAP	7026 049		55F	17		13	12	16	8	16	15	4	9	10	10	3	1	13.6	I F
HAP	7027 049		23F	16	13	7	15	14	15	16	14	12	14	12	15	0	0	14.4	E+R
HAP	7028 049		40F	17	15	6	10	15	14	15	13	10	12	12	13	-1	-3	13.5	E+R
HAP	7029 049	1	23F	16		7	11	16	14	17	14	11	11	12	14	-1	0	14.3	E+R
HAP	7030 049	1	27F	17		14	12	16	16	18	17	11	12	14	15	1	-1	15.6	I F

RIMITIVE		BASIC	IDEAL	COMMENTS
F U	L	E*F U	E/R'A'	HS SCIENCE TCHR
+R A	H	I*F*A	I/R.U'	HS SCIENCE TCHR
F U+	H	I F U	E'R'A'	HS SCIENCE TCHR
R A	H	E F*U*	I'R.U/	HS SCIENCE TCHR
F U+	H+	I*F A*	I/R'A/	HS SCIENCE TCHR
R+U+	H	E*F*U	E/R.A'	HS SCIENCE TCHR
F A	H	E*F A	E/R'U'	HS SCIENCE TCHR
R A	H	E F*U*	I'R.A.	HS SCIENCE TCHR
+F A	H	E*F A	E/R'U'	HS SCIENCE TCHR
+R U+	H	I*F*U	I/R.A'	HS SCIENCE TCHR
F U	H+	E*F U	E/R'U	HS SCIENCE TCHR
+R U	H	E F*U	I'R.A'	HS SCIENCE TCHR
+R U	H	I*F*A*	I/R.U.	HS SCIENCE TCHR
R A	H	I*F*U*	I/R.A.	HS SCIENCE TCHR
R+A	H	E*F*A	E/R.U'	HS SCIENCE TCHR
F+U	H	I F U	E'R'A'	HS SCIENCE TCHR
F U	H+	E*F U	E/R'A'	HS SCIENCE TCHR
F+U+	L	E*F U	E/R'A'	HS SCIENCE TCHR
+R U	H	I*F*A*	I/R.U.	HS SCIENCE TCHR
+R U	H	E F*U	I'R.A'	HS SCIENCE TCHR
+R U	H	E F*U	I'R.A'	HS SCIENCE TCHR
R U	H	I F*U	E'R.A'	HS SCIENCE TCHR

UNIVERSITY OF COLORADO GRADUATE SCHOOL COMPUTING CENTER

Appendix 6

Individual Rankings of Relative Heterogeneity* of the Occupational Groups by Nine Colleagues

Occupational Groups by Code**

Raters	1	2	3	4	5	6	7
Cartwright	7	2	4	6	1	3	5
Harvey	6	5	3	7	4	1	2
Hinkle	2.5	2.5	5.5	1	7	5.5	4
Hodges	5	4	7	2	1	6	3
Lipetz	4	5	6	1	2	3	7
Michener	6	4	2	5	1	3	7
Radcliffe	7	5	4	3	6	2	1
Scott	4	6	5	2	7	1	3
Whelan	3	1	6	2	7	4	5

*Ranked from most homogeneous (1) to most heterogeneous (7)
**The codes for the occupational groups are:

1. Attorneys
2. Physicians
3. Pharmacists
4. Mathematicians, Physicists, Programmers
5. Realtors
6. Social Workers
7. Science Teachers